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AMERICAN ANTIQUITY

VOL. XIX OCTOBER, 1953 No. 2

ARCHAEOLOGICAL RESOURCES OF SAN NICOLAS ISLAND, CALIFORNIA*

CLEMENT W. MEIGHAN AND HAL EBERHART

SAN NICOLAS is a small island located off the coast of southern California some 75 miles southwest of Los Angeles and 55 miles from the nearest point of the mainland. It is the most distant from the mainland of eight islands referred to collectively as the Channel Islands. San Nicolas is about 8 miles long by 4 miles wide and is 32.2 square miles in area.

According to Norris (n.d., pp. 67-74), San Nicolas Island is a faulted asymmetric anticline composed of Pleistocene sediments lying unconformably on Eocene sandstone and shale. Original deposition during the Eocene was followed by anticline development and faulting in Eocene-Oligocene times. Miocene volcanic activity probably accounts for the several small diabase dikes on the island and for rhyolitic Begg Rock 7 miles northwest. The Pleistocene sediments were laid down during the first half of that period when the island was nearly or entirely submerged. Final uplift started with middle Pleistocene and was completed before the formation of the minus 300 foot terrace at the first phase of the last glaciation. The present raised terraces, seven in number, are judged to be the result of diastrophic movements of the insular block rather than eustatic sea level changes because of their failure to correlate with terraces on the mainland and nearby islands. Geologic evidence for a Pleistocene land bridge to the mainland or the other islands is negative.

This island has been subject to sporadic archaeological investigation for 78 years, beginning with the work of Schumacher in 1875 (Schumacher, 1875; 1877). Publication of the results of the many field trips has been meager and scattered, however, and the present report is an attempt to summarize the archaeology as it is now known. Although the information available is not as adequate as the modern archaeologist would like, it seems highly desirable to draw together such data as are available. The heavy erosion which is operating on this semi-desert island has already obliterated some of the sites, heavily damaged many others, and is proceeding to the total destruction of all archaeological remains on the island. If present conditions continue unchecked, it will not be many years before there is nothing left of this island culture for the archaeologist to investigate. Now is the time, therefore, to take stock of our knowledge in order that some action can be taken to complete the record.

Apparently the first European to see San Nicolas was Bartolome Ferrer who sailed through the Channel Islands in 1543. It was named by Vizcaino in 1602, although neither of these early voyagers actually set foot on the island (Wagner, 1937, p. 412).

Ethnographically, almost nothing is known of the tribe which formerly lived on San Nicolas. Early Spanish explorers were aware of the island and must have visited it, but contacts were much less than in the case of the northern and eastern islands. This is indicated by the virtual absence of trade goods, in particular glass beads. The latter occur

* This report is based on a reconnaissance of San Nicolas Island made by the writers in January, 1953. The island is at present under the jurisdiction of the U. S. Navy, and permission to work there was obtained from the U.S. Naval Air Missile Test Center, Point Mugu, California. We are indebted to Captain E. M. Condra, Jr., commander of that station, for making the reconnaissance possible and for expediting the project in many ways. Appreciation is also expressed to A/s James V. Stallings and Ph/3c Claude D. Williams for their assistance on San Nicolas. Bibliographical information was supplied by R. J. Squier and A. R. Pilling of the University of California, Berkeley.

Particular mention is directed to Figures 34, 35, 36, 37 and 38 which are official United States Navy photographs. Permission to use these is appreciatively acknowledged.

abundantly on the mainland and on other islands but are not reported from San Nicolas. One explanation for the lesser degree of contact with San Nicolas is seen in its location. It offers little refuge for sailing vessels; the larger and more sheltered islands were naturally sought by early visitors. Also, San Nicolas is far enough at sea to be off the main route of vessels running along the coast.

The group, herein called the Nicoleño after Kroeber's usage, undoubtedly suffered from Spanish recruitment to the missions on the mainland, and it is likely that their numbers were further diminished in the early 19th century by Aleut sea otter hunters brought to the Channel Islands from Russian-held Alaska. At any rate, only about twenty Nicoleño remained in 1835, at which time all were taken to the mainland, with the exception of a single individual. The latter, a woman, was somehow left behind and lived alone on San Nicolas for eighteen years. Finally, in 1853, she was found and taken to Santa Barbara where she died of illness within seven weeks (Dittmann, n.d., pp. 55-81; Ellison, 1937, pp. 37-39, 77-89; Hardacre, 1880; Holder, 1910, Ch. 28; Yates, 1896, pp. 543, 544).

Virtually all that is known of Nicoleño ethnography is based on the few bits of information gleaned from the last survivor. By the time she had been taken to Santa Barbara, all her people had died and no one could understand her language. From the few words which were recorded, Kroeber assigns Nicoleño to the Shoshonean stock (Kroeber, 1925, p. 633).

When found, the woman had been living in a brush enclosure similar to several others found on the island at that time. These are described as being 6 feet in diameter with a narrow opening at one side and having thin walls up to 5 feet high. In inclement weather she lived in a nearby cave. A third type of dwelling still standing in 1853 was a hut made of whale ribs covered with brush. Around some of the enclosures, poles 4 to 8 feet high were stuck in the ground and on top of these or hanging from sinew rope stretched between them were chunks of dried seal meat. The woman saved all the bones from her food and took them out repeatedly to gnaw on them. Also, she had no aversion to seal meat which was quite high. She prepared a meal for her discoverers by roasting two kinds of roots in the open fire which burned within the brush enclosure.

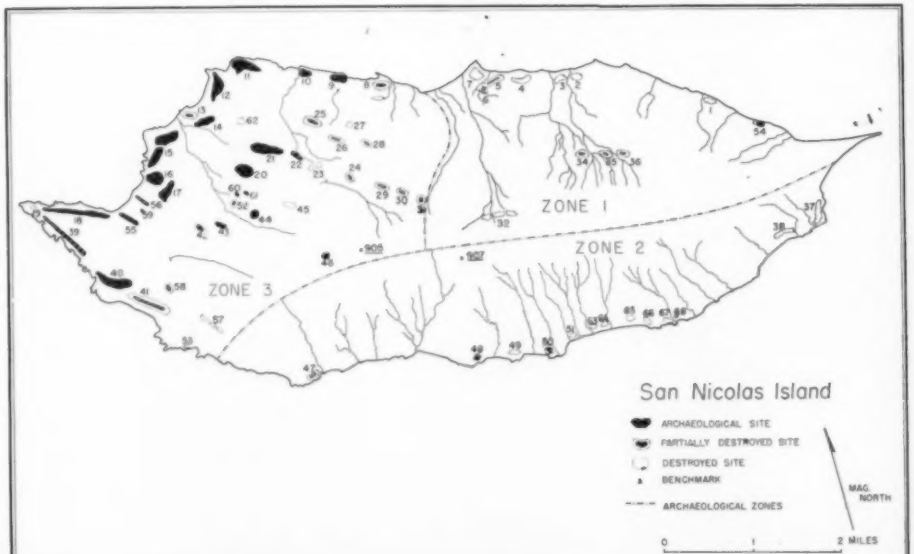

FIG. 33

The woman was apparently fond of making baskets, working on several at a time. Four different shapes are mentioned in the literature, all of which were made of grass:

1. Storage (?) basket, "woven of grass," 36 inches long, 18 inches wide, *ca.* 14 inches deep. Provided with a sealskin cover.

2. Long-necked water bottles "in shape and size very like a demijohn" (Ellison, 1937, p. 87) tarred inside with asphaltum.

3. Burden basket carried by placing straps over the shoulders and under the arms.

4. Bags or sacks used for storage or carrying.

The woman wore a single garment made from shag (green cormorant) skins sewed together with sinew, feathers outside and pointing downward. This gown was sleeveless, tied at the waist with a sinew rope, and reached well below the knees. She wore no hat.

Her other possessions included a well made sinew rope 25 feet long and one-half inch in diameter, thought to have been used in snaring sleeping seals (Dittmann, n.d., p. 57; Ellison, 1937, p. 83); sinew fishing line; bone and abalone shell fishhooks; bone needles; bone knives, and a knife made of a piece of iron hoop stuck in a rough wooden handle. A careful description of these few belongings would be of great value to our knowledge of Nicoleño material culture, but unfortunately the specimens cannot be traced. The watertight baskets were retained by two Santa Barbara residents (Hardacre, 1880, p. 664), the bird-skin dress is said to have been sent to the Vatican (Yates, 1896, p. 544), and other objects belonging to the woman were destroyed in the San Francisco fire of 1906 (Kroeber, 1925, p. 634).

In addition to the woman's possessions, several perishable articles of wood and fiber have been found on San Nicolas. These may be presumed to represent Nicoleño material culture of the later periods, since the conditions of preservation on the island are not particularly favorable and the finds, all of which come from open sites, could hardly be expected to survive more than a few hundred years. The following artifacts have been reported:

1. Cordage, mats, and skirt fragments made of eel grass (Woodward, 1941, p. 285).

2. Grass skirts, woven bags, and baskets (Walter, 1932, p. 168).

3. Four chipped stone knives with wooden handles preserved (Hodge, 1922, p. 227; Leroi-Gourhan, 1946, Fig. 340b).

4. Stone drill with wooden handle (Moorehead, 1900, Fig. 372).

5. Eleven wooden knife handles, 1 wooden ladle, 1 arrow shaft, 1 wooden dart foreshaft with bone barbs, and 1 drill with wooden shaft and stone point (Nelson, 1936, p. 204). With the exception of the last two items, these artifacts have not been described and published.

The four words of Nicoleño which were recorded are *tokay* (hide), *nahchey* (man), *taygway* (sky), and *pinoochey* (body). The Nicoleño were called *Niminokotch* by the Chumash (deCessac, 1951, editorial note, p. 4), and their island was called *ghalas-at* (Kroeber, 1925, p. 633).

The predominant Nicoleño mortuary practice appears to have been burial (sitting and flexed), although there is also some evidence for cremation (Rogers, n.d.). Fragments of burned human bone were found by the writers at site 54; flexed burials occur near the surface of the same site.

Earliest archaeological work on San Nicolas Island was evidently done by Paul Schumacher for the Smithsonian Institution in 1875. Schumacher's party did little excavation but collected great quantities of artifacts from the surface of the sites. In the few days on the island, Schumacher (1877, p. 48) comments that he recovered 127 mortars and about 200 pestles, plus several boxes of smaller artifacts. The bulk of this collection went to the Smithsonian, although a small sample of Schumacher's collection is now in the Peabody Museum at Harvard.

Following Schumacher, and apparently in competition with him to some extent, excavations were carried out by Leon deCessac for the government of France. This work, done in 1878, yielded a large collection, including some grave lots and a number of steatite fish and bird effigies. Only the effigies have been described (deCessac, 1951). The collections were sent to France and are now preserved in the Musee de l'Homme, Paris.

Other early collectors on San Nicolas included Stephen Bowers in the 1880's, whose collections were purchased in part by the

American Museum of Natural History to become part of the Terry Collection (Nelson, 1936, p. 200). Lorenzo G. Yates, another early California collector, appears to have been on San Nicolas about the same period, but it is not known whether he made archaeological collections (Yates, 1896).

More recently, extensive work on San Nicolas was done by Ralph Glidden for the Heye Foundation (1921-1922). Southern California institutions have also been active in excavation of San Nicolas. Phil C. Orr spent nine months on the island for the Santa Barbara Museum of Natural History, and excavations have also been carried out by Arthur Woodward and Bruce Bryan for Los Angeles County Museum and by Malcolm Rogers for the San Diego Museum of Man.

In Table 3, the size and location of the known collections from San Nicolas are given.

TABLE 3. KNOWN ARCHAEOLOGICAL COLLECTIONS FROM SAN NICOLAS ISLAND, CALIFORNIA.

Institution:	*Collector and date:*	*No. Specimens:*	*Remarks:*
Peabody Museum, Harvard[1]	Mostly Schumacher, 1875	98	Stone pieces only. Surface.
Musee de l'Homme, Paris[2]	deCessac, 1878	*ca.* 2500	Stone and bone objects. Some grave lots.
American Museum of Natural History[3]	Stephen Bowers, A. W. Barnard 1879-1891	4048 (plus 40,000 shell beads)	Surface and grave lots.
Smithsonian Institution[4]	Schumacher, Bowers, before 1900	300	Surface
Museum of Anthropology, University of California, Berkeley[5]	Mostly Blanche Trask, before 1910	1717	Surface, one grave lot.
State Indian Museum, Sacramento[6]	A. R. Sanger, 1920's	700	Surface, grave lots.
Museum of the American Indian, Heye Foundation[7]	Ralph Glidden, 1921, 1922	*ca.* 1500	Surface, grave lots.
Antelope Valley Indian Museum, Lancaster, Calif.[8]	H. A. Edwards, 1920's	Several hundred	Surface, grave lots (textiles).
Southwest Museum, Los Angeles[9]	Various	*ca.* 150	Surface.
Santa Barbara Museum of Natural History[10]	Phil C. Orr, 1940's	Several thousand	Surface, grave lots.
Los Angeles County Museum	Bruce Bryan, Arthur Woodward, 1926 and later.	Several hundred	Surface, grave lots.
San Diego Museum of Man	Malcolm Rogers, 1930's	Several hundred	
University of California, Los Angeles	Peck, Meighan, Eberhart, 1951-53	310	Surface, one grave lot.

Notes: Information on collections was supplied by the following.

[1] Helen W. Whiting, Chief Cataloguer, Peabody Museum.
[2] Henri Lehmann, Charge du Departement d'Amerique, Musee de l'Homme.
[3] J. A. Ford, Assistant Curator of North American Archaeology (also from Nelson, 1936).
[4] F. M. Setzler, Head Curator, Dept. of Anthropology.
[5] A. R. Pilling, University of California, Berkeley.
[6] Jack R. Dyson, Curator.
[7] E. K. Burnett, Assistant Director.
[8] H. A. Edwards, Curator.
[9] Ruth D. Simpson, Assistant Curator.
[10] Phil C. Orr, Curator of Anthropology and Geology.

None of these collections have been published except for brief notes on exceptional pieces. Although many of the collections were made by untrained individuals in the days before scientific records were kept, it is nonetheless regrettable that despite some 15,000 specimens from San Nicolas preserved in American museums so little is known of the island's archaeology.

San Nicolas has virtually no land animals, and none which would have been valuable to the Indians as food. There are only three land animals: island fox (*Urocyon littoralis dickeyi*), white-footed mouse (*Peromyscus maniculatus exterus*), and island night lizard (*Xantusia riversiana*). The Nicoleño also had dogs of several breeds, some of which survived until 1853 (Bowers, 1889, p. 59; Ellison, 1937, p. 82). The dogs undoubtedly were taken to San Nicolas by the Indians; Norris (n.d., p. 74) is of the opinion that the fox was also introduced by the Indians. If this is true, it throws some light on the antiquity of aboriginal settlement, for the San Nicolas fox is a diminutive form which presumably had a considerable period of isolation in order to develop into its distinctive sub-species.

In contrast to the rarity of land animals, San Nicolas is particularly favored by the occurrence of abundant sea mammals. Bartholomew comments: "All of the species of seals and sea lions known to come ashore regularly in California occur on San Nicolas" (Bartholomew, 1951, p. 15). A census of sea mammals on San Nicolas, taken in April 1950 (Bartholomew, 1951, p. 16), revealed the following numbers of pinnipeds:

Zalophus californianus (California sea lion)	4058
Eumetopias jubata (Steller sea lion)	2
Phoca vitulina (Harbor seal)	125
Mirounga angustirostris (Northern elephant seal)	168
Total	4353

It should be noted that the count of *Zalophus* and *Mirounga* represents some of the largest herds recorded in California. There can be no doubt that San Nicolas offers favorable conditions to sea mammals, and the Nicoleño must have capitalized on this abundant source of meat and skins. Bones of sea mammals, including sea otter (*Enhydra lutris*), occur abundantly on the archaeological sites.

Birds also served as a source of food and raw materials for the Nicoleño, as attested by abundance of bird bones in the sites. Land birds are rather scarce, only ravens being much in evidence at the present time. Sea birds are extremely common, however. Bowers comments: "On one occasion a continuous flock of these birds flew past our tents for the space of about three hours" (Bowers, 1889, p. 59). Bird bone was used by the Nicoleño for beads, whistles, and awls.

Fish must have constituted a major portion of the food resources; this is attested by abundance of fishbones in the site and by the presence of shell and bone fishhooks in considerable numbers. Species utilized are not known, but they included several fish of fairly large size, among them the California Sheepshead (*Pimelometopon pulchrum*).

A final source of meat, and perhaps the most important one, was the shellfish obtainable from the rocky shores of the island. The village sites are marked by a litter of discarded shells, of which the most prominent are abalone of three species (*Haliotis rufescens, H. fulgens,* and *H. cracherodii*). Thousands of these shells cover the surface of the dunes in some places (see Fig. 37). Other shells occurring in the sites include rock scallops (*Hinnites giganteus*), mussels (*Mytilus californianus*), limpets of several kinds, and sea urchins.

So far as plant foods go, it seems likely that the hundreds of mortars and pestles found on San Nicolas were used for the preparation of some plant material. What this was is not now readily discernible in view of the scarcity of vegetation on the island. The most likely plant food would be grass seeds of some sort, although some portions of the island supported trees, brush, and moss as late as the 1840's (Bowers, 1889, p. 60). Bowers also notes tremendous numbers of shells of land snails (*Helix* sp.) which occur in the middens and throughout the island. None of these now live on San Nicolas, but originally there must have been sufficient vegetation to support them.

It is interesting to note that the only early reference to use of mortars on San Nicolas comments that they were used for pounding dried abalone meat (Anonymous, 1857, p. 347). If this is true, it is possible that the Nicoleño diet consisted almost exclusively of meat with very little vegetable food.

San Nicolas has some 68 aboriginal sites scattered over its 33 square miles, or about 2 sites to the square mile. The exact number of settlements is difficult to ascertain with real accuracy, for in many locations the shell deposits are virtually contiguous and it is a fine point whether they be called one site or two. The situation is further complicated by the heavy erosion on some parts of the island which may have broken up large midden areas into two or three small "islands" 50 or 100 feet from one another. Our policy has been to consider all separate deposits as separate sites unless there was some reason to believe that they had formerly been in actual junction with an adjacent location, in which case two or more deposits might be considered an individual site. The latter situation has prevailed for only 3 of the sites on the island.

Of the 68 known sites, 55 were inspected by the writers and the remainder were either seen from a distance or were located in areas which gave no indications of new environmental features. All portions of the island were investigated, and a remarkably consistent pattern of settlement was seen. The aboriginal inhabitants of the island located their villages on sand dunes, and all sites surveyed, including those inland, either are on sand dunes at the present time or give indications of having been so located when occupied.

Although the sites are in general quite similar to one another, their distribution on the island is not at all uniform. As might be expected of a people who derived their chief livelihood from the sea, the majority of the settlements are located on the shore or within 200 yards of the shore (Fig. 33). Slightly more than half of the sites, 38 in all, fit this category. In a sense, all of the sites on the island could be defined as "coastal" since the small size of the island requires that any settlement on it be within a mile and a half of the beach. However, it is interesting to note that 20 of the San Nicolas villages are a mile or more from the beach. The latter are also at considerable elevation above sea level, on the plateau occupying the center of the island. This part of the island now has little in the way of advantages for settlement — there is virtually no vegetation, no water, and usually a stiff climb is required to reach the food resources of the ocean. All indications are that this desolate area was once considerably more attractive.

The determining factors in the settlement pattern on San Nicolas seem to have been the following, ranked in order of importance:

1. Access to the beaches and the sea
2. Fresh water
3. Elevation (choice of a high spot with relatively unimpaired view)

Factors which apparently had little or no importance in the selection of a village site include defense (inaccessibility) and protection against the prevailing winds.

Fresh water is extremely limited on San Nicolas at present, being concentrated in a few springs at the northwest corner of the island. However, the numerous gullies and intermittent streams would trap enough water for seasonal use by small bands, and there is evidence that the island was formerly rather well watered. Bowers commented in 1890: "There is an abundance of water on the island, but it is slightly brackish."

The inhabitants of San Nicolas definitely preferred to live on an elevated spot, and the heaviest occupation is visible on the tops of dunes which rise 50 to 100 feet above the surrounding terrain. Inland sites are usually on the edges of cliffs or terraces and are on top of sand dunes up to 50 feet in height. Houses and shelters were apparently on top of the dunes, and discarded shells, bones, and other debris were tossed out on the slopes where they now form a thin veneer of refuse often covering several acres of sandy slope.

In addition to the general comments above, it is convenient for descriptive purposes to divide San Nicolas into three archaeological zones. These zones conform in general to physiographic regions of the island and aid in giving a clearer picture of the settlement pattern. The chief features of each zone are summarized below:

Zone I: Roughly the northeastern third of the island. Sparse settlement, only 12 sites known and of these 11 are now destroyed or nearly destroyed (see Fig. 36). Originally sites were shell middens on terraces overlooking the ocean to the north. Type site is no. 54, a dune 100 by 300 feet, dropping 30 feet to the water on the north slope. Dune is capped by up to 30 inches of sandy black shell midden. Site yielded flexed burials in midden soil, possible cremations as evidenced by burned human bone, *Haliotis* fishhooks, stone disc beads, oli-

vella beads, bird-bone awls, scattered whale bones (scapula, ribs).

Zone 2: The southern coastal strip. Steep, rugged, and heavily eroded hills descend 900 feet in a mile to the water's edge. No coastal plain. Sparse settlement: 13 sites recorded, nearly all of which appear to have been rather small. All but 2 sites in this zone have been obliterated by water erosion, and only scattered patches of shell remain. Best remaining site is no. 50, a large sand dune 350 feet in diameter and *ca.* 25 feet high. Dune is capped by 18 to 30 inches of black sandy shell midden; grassy hummocks on surface of site.

Zone 3: The northwestern third of the island. Primarily sand with large dunes around the coast. Heavy settlement; there are 43 sites in this zone. The best spring is in this area (Schumacher, 1877, p. 46); this portion of the island apparently contained most of the people throughout the occupation and it now contains virtually all the salvageable archaeology on the island. Some 20 sites would repay investigation although it is doubtful that any of them would support a major excavation. Type site is no. 55, a long sand dune ridge running parallel to the beach at the extreme west end of the island. Dune is 1500 feet long, 300 feet wide (50 feet wide at top), and 100 feet high. Top has grassy hummocks, pits containing whale ribs, and a few inches of black sandy shell midden. Slopes of dune have scattered shells and bones extending all the way to the base on all sides. Site yielded pointed bone tools, stone disc beads, stone core tools, mortar and pestle fragments. There is a cemetery at one end of the site which is now largely destroyed by wind erosion; the cemetery is not in midden but in sterile sand (see Figs. 34, 35, 37, 38).

The antiquity of settlement on San Nicolas is a question of considerable interest. No final conclusion can be reached on this point until controlled excavations can be published. However, observations made during survey of the island incline the writers to the belief that most if not all of the occupation on San Nicolas is relatively recent in time, recent meaning all in the A.D. period and most of it post-1000 A.D.

One sign of lengthy occupation is deep midden deposit, and especially would deep mid-

FIG. 34. Sand dune area of zone 3. Large dunes in the distance are all archaeological sites.

dens be expected on a small island if it had been occupied for any considerable length of time. Although some of the San Nicolas sites have a superficial appearance of great depth because they cap high dunes, the deepest shell midden which could be found was 36 inches. Of 35 sites which still retained measurable deposit, shell midden depth ranged from 0 to 36 inches with an average of only 15 inches. These figures may not be entirely accurate as to original conditions because some sites have been destroyed and some were not visited, but the 35 measurable sites show a remarkably consistent pattern. Artifacts and burials may occur at depths greater than 36 inches, but this is because they have been dug into the sterile sand beneath the middens.

Midden refuse on San Nicolas is a very black sand containing shells, bones, fire-hearths, discarded implements, and burials. Refuse deposits are very clearly demarcated from the sterile yellow sand which underlies them. All midden seen was loose, friable, and "sooty" in appearance; none gave any physical indications of alteration due to age. Although little is known of the rate at which shell midden accumulates, it is apparent that no great antiquity is indicated by the few inches of midden present on San Nicolas. The pattern of a large number of shallow middens covering extensive areas suggests a large population for a short period rather than the reverse.

It may also be noted that the cultural material picked up from the sites shows no very sharp differences. Perforated stones, bird-bone awls, crude core tools, mortars, pestles, and shell fishhooks seem to occur throughout the island. There are undoubtedly cultural differences present which could be discerned by careful analysis of the collections, but the impression is that the stratigraphic sequence will reflect the differences between several phases of late rather than the difference between a late and an early horizon.

Our conclusions bearing on the length of occupation on San Nicolas must be regarded as very tentative. Certainly Orr (1951, personal communication) expresses an opposite opinion and believes the occupation of San Nicolas to extend much further into the past. He has called attention to similarities between San Nicolas sites and those of his early ("Dune

FIG. 35. Sand dune cemetery area of zone 3 being exposed by wind action.

FIG. 36. Site 5 showing erosion damage.

FIG. 37. Site 21 showing abundance of *Haliotis* shells on surface.

Dwellers") culture on Santa Rosa (Orr, 1951, p. 224; also personal communication, 1953). Since Orr has the advantage of extensive field work on San Nicolas, his opinion is worth serious consideration. At the same time, lacking site reports it is difficult to reconcile our observations with the idea of several thousand years of occupation. Only further work can settle the matter conclusively.

The aboriginal population of San Nicolas can be determined only by inference from archaeological remains, but there can be little question that the island was heavily populated by aboriginal standards. With over two sites to the square mile, and some of these very extensive, there must have been either a very long occupation by a small group or a fairly short occupation by a large group. As mentioned previously, the superficial appearance of the sites tends to support the latter view, and one is therefore reduced to estimating the size of population necessary to maintain the villages and to accumulate the extensive shell midden areas.

There seems to be no specific estimate made of Nicoleño population aside from a comment by Bryan (1930b, p. 223) estimating 1500 inhabitants. For San Miguel Island, which is similar to San Nicolas in size and environment, a maximum population of 2000 has been estimated (Rogers, 1929, p. 336). For the larger and more favored islands, population estimates range from 3000 for Catalina (Gleason, 1951, p. 16) to 10,000 for Santa Cruz (Rogers, *op. cit.*). All of these figures may be too high, although they are based on the extent of the refuse heaps and the large cemetery areas, the latter often containing 300 or more burials.

Kroeber makes no specific estimate of the population of San Nicolas but includes the island as part of a general Santa Barbara Channel Island area with an estimated density of 45-70 persons per 100 square kilometers (Kroeber, 1936, p. 154). This is, of course, an average density applied to a large area and was not intended to refer to small included units. However, on the basis of archaeological survey and considering the size of the village sites, it seems clear that this density is considerably too low for all of the Channel Islands. San Nicolas, for example, which has slightly less than 100 sq. kilometers, would be

FIG. 38. Site 11, looking south.

judged to have had a total population of only 60 or 70 persons. Similarly, the other Channel Islands figure out to a population very much smaller than they must have had. The writers feel that a conservative estimate for the Nicoleño would be between 600 and 1200 people at the time of their maximum development. This figure is more than ten times the general areal density mapped by Kroeber, and if the same difference prevails on the other islands, this is certainly justification for setting up the Channel Islands as a separate area of very dense aboriginal population. The estimate of Nicoleño population is derived from the following considerations:

1. Density of sites and area of middens. Assuming all of the sites to have been occupied contemporaneously and assigning 50 persons to each settlement, the total inhabitants would number 3400. This of course is too high a figure, for it is unreasonable to assume that all of the sites were occupied simultaneously. On the other hand, what is known of the village size indicates that considerably more than 50 persons lived in one place. Orr mentions a late village on Santa Rosa which had 40 house pits showing, implying a population in the vicinity of 200 individuals (Orr, 1951, p. 222). Bowers counted 40 house pits in one area on San Nicolas, suggesting that the same pattern prevailed here (Bowers, 1890, p. 60). With only 3 villages of this size on the island (which would be only 5 per cent of the sites) a population of 600 is indicated. There are at least 10 sites on San Nicolas with sufficient area to support 40 houses at once, and it seems reasonable to propose occupation of 3 or 4 of these at the same time.

2. Size of cemeteries. Most of the early accounts mention extensive cemeteries weathering out of the sand dunes, and although the references are not too precise they indicate cemeteries of 100 to 300 or more individuals. Several photographs are in existence showing dozens of burials on the surface of the sites (Yates, 1896; Clark, 1944, p. 11). Although the cemeteries may represent several generations, it does not seem likely that a population of less than several hundred could account for the large number of burials thus far discovered.

3. A third tentative lead lies in the statement by Schumacher that he picked up 127 mortars and 200 pestles (Schumacher, 1877, p. 48). If one can venture the assumptions that the mortars are approximately contemporary and that there was one to a family, a population figure of 600 is immediately obtainable. Both of these assumptions are questionable, but since Schumacher found all his mortars on the surface in only 11 days on the island, it is certain that he got only a small percentage of the total number. Indeed, it would be remarkable if he recovered even 5 per cent of the total of this class of artifacts; this again supports a population estimate of several hundred individuals at least.

4. Finally, the extremely favorable environmental conditions on San Nicolas would support 600-1200 Indians rather easily, and there is no reason to suppose that the population would not breed up to this level within a very few generations. With sufficient fresh water, abundant food from the sea, and relative isolation from potential enemies, it is difficult to believe that San Nicolas, once occupied, would support only a handful of people.

ARTIFACTS

An outline of artifact types is presented, as an indication of the archaeological complex present on San Nicolas. This check-list gives no precise information on stratigraphy, but it does serve to indicate a generally late pattern in the southern California area and it also can be used to check the cultural affinity of San Nicolas with the other islands and with the mainland.

The artifacts are broadly segregated into two groups, grave offerings and ordinary utility objects. The latter group includes artifacts which are surface finds or which are known to occur in the midden debris; the grave offerings include the more elaborate pieces which accompany burials. Some of the "utility objects" also occur in graves and this is noted in the descriptions below:

Ground stone

1. Abundant mortars and pestles (metates absent). Mortars most commonly sub-globular in form, of sandstone. Pestles of three types: cylinders, bulb-ended, and bulb-ended with encircling ridge (see Figs. 42, 43).

2. Steatite dishes and bowls, relatively rare and most commonly found as grave offerings.

3. Perforated stones. These include more or less globular sandstone pieces 5 to 10 cm. in diameter, biconically perforated (very abundant, occur as surface

pieces and also in graves — see Putnam, 1879, p. 174; Bryan, 1930a, p. 149).

4. Grooved sandstone cobbles. Natural elongate stones, 15-30 cm, with pecked longitudinal grooves. May be sinkers, but since they are comparatively scarce and of considerable size some could be boat anchors.

5. Tubes and pipes. Includes: a) rather thick-walled serpentine tubes which are probably not pipes (see Fig. 43, *a*), b) tubular steatite pipes (Moorehead, 1900, pp. 239, 240), c) steatite pipes bent at an angle (Hodge, 1922, p. 228). The latter are not illustrated and appear to be quite rare. The thick-walled tubes are found as surface pieces; the pipes are nearly always burial accompaniments. Both pipes and tubes commonly bear incised decoration which is usually in the form of simple cross-hatching (see Fig. 43, *a*).

6. Plummet-shaped objects. Ground sandstone, *ca.* 3 to 10 cm. in length. Fairly common as surface finds. Similar objects occur on San Miguel, where they are sometimes found with grooves or asphaltum around one or both ends. The latter are interpreted as sinkers (Heye, 1921, p. 49); these objects have also been classified as charmstones (Nelson, 1936, p. 202) and as files for working shell fishhooks (Irwin, 1946, p. 18).

7. Beads and pendants. A variety of stone beads and pendants is reported for San Nicolas; a sample of types is indicated in Fig. 39.

Other ground stone objects reported from San Nicolas include arrow shaft straighteners, spoons and ladles, and boat-shaped vessels (Nelson, 1936, p. 202).

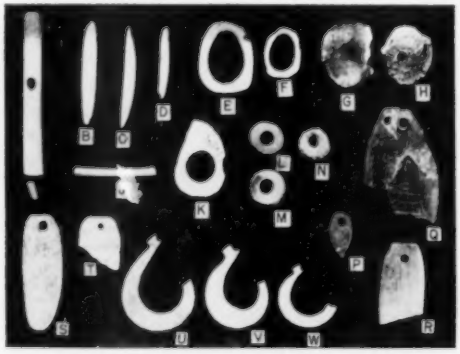

FIG. 39. Artifacts from San Nicolas Island. *a*, bird bone whistle; *b-d*, bone gorge fish hooks; *e-f*, limpet shell ornaments; *g-h*, shell disks; *j*, birdbone tube; *k*, unfinished shell fishhook; *l-m*, red stone beads; *n*, baked clay bead; *p-r*, stone pendants; *s-t*, shell pendants; *u-w*, *Haliotis* shell fishhooks. Length of *a*, 6.2 cm.

Chipped stone

1. Core tools. Core choppers, scrapers, and planes made from chert cobbles by percussion flaking are extremely abundant and can be picked up on the surface of almost every site.

2. Knives. Percussion-flaked knife blades of chert, ovoid to willowleaf in shape, occur as surface finds. Some of these have been found hafted to wooden handles, as mentioned previously. Pressure-flaking, if used at all, is confined to edge retouch after the piece has been roughed out.

3. Projectile points. Stone projectile points are so rare as to be almost entirely absent. Bone pointed arrows are mentioned for Santa Catalina (Hodge, 1922, p. 226) and it is likely that these were also used on San Nicolas. The large collection at the American Museum of Natural History includes only 68 projectile points from San Nicolas, compared to 45 "spear points" and 476 "knives" (Nelson, 1936, p. 202). The projectile point types have not been published.

4. Crescentic stones. Nelson tabulates 9 chipped stone objects which he calls "animal forms." From his illustration these are undoubtedly crescentic stones of a type fairly common in California (Nelson, *op. cit.*).

FIG. 40. Bone artifacts from San Nicolas Island. *a-c*, bone bars made of heavy rib bones; *d*, pointed bone implement of sea mammal bone; *e*, worked fragment of sea mammal rib. Length of *a*, 17.5 cm.

Shell

Fishhooks: One of the commonest artifact types on San Nicolas. Orr (personal communication) reports shell hooks to be more common on San Nicolas than anywhere else; three people picked up 156 hooks from the surface in one day. Hooks are made from shells of *Mytilus californianus*, *Haliotis sp.*, or occasionally from the red top shell, *Norisia norrissii* (Robinson, 1944, p. 58). A summary of published material on southern California fishhooks is given in Heizer, 1949. Unfinished shell hooks are frequently found (Fig. 39, *k*).

Containers: Sea shells filled with asphaltum, some showing stick or brush marks where asphaltum was removed, are of fairly common occurrence (Fig. 44). Shells used include *Haliotis cracherodii*, *Hinnites giganteus*, and *Mytilus californianus* (rare). Shells are also found containing red pigment, including *Haliotis cracherodii* and *Trachycardium quadragenarium*; one *Haliotis rufescens* shell is reported which has the siphonal openings plugged with asphaltum; this shell contains the bones of an infant (Gifford, 1947, p. 7). A container for holding shell ornaments was made by cementing together two *Haliotis* shells with asphaltum (Walker, 1936).

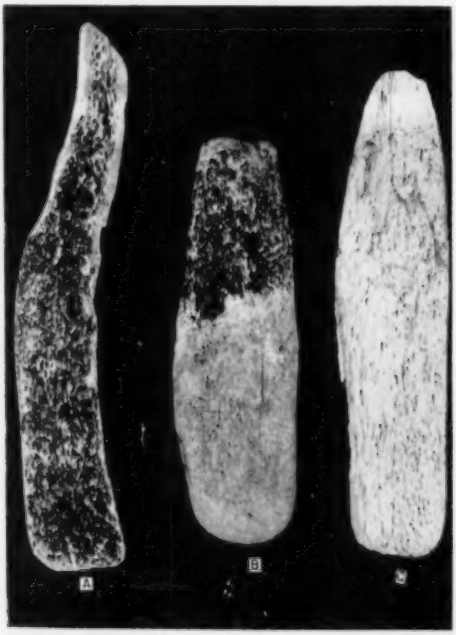

FIG. 41. Bone artifacts, San Nicolas Island. *a*, marine mammal bone with asphaltum on one side; possibly a handle for a knife; *b-c*, spatulate bone objects; *b* still bears asphaltum on end. Length of *b*, 9.2 cm.

Beads and pendants: Shell beads include discs and cup-shaped beads of *Olivella*, as well as whole *Olivella* shells with spires ground off. There are also small discs or rings of an unidentified clam shell (Gifford, 1947, type Jlc) and a great variety of square, oval, and round pendants, mostly of *Haliotis*. At least 14 species of shells are used for beads and ornaments (Gifford, 1947).

Other: Unmodified beach pebbles, 2 to 4 cm. in diameter, were used with asphaltum. The pebbles were heated and rolled around in baskets in order to deposit melted asphaltum and make a watertight container. Nidever saw the "lost woman" using pebbles in this way (Ellison, 1937, pp. 86, 87).

Bone artifacts

Artifacts of bone are abundant on the island and occur in a wide variety of shapes and sizes. It seems reasonable to assume that bone substituted for the wood and chipping-stone of areas more favored in these resources. As would be expected, the bones used are almost universally those of sea mammals, birds, and occasionally fish. Implements of land mammal bone are not reported, but the fact that six "heel-bones" (astragali?) of deer were found with an elaborate multiple burial (Bryan, 1930b, p. 216) indicates that this material was traded in, as suggested for the more northerly islands (Rogers, 1929, p. 448). Most of the known types of bone artifacts from San Nicolas are illustrated by Gifford (1940).

Awls (Fig. 40, *d*). Among the most common bone tools. Usually made of the long bones of birds and the long bones, ribs, or penis bones of marine mammals, with bird bone predominating; occasionally of fish bone. Normally thin tapering pieces which retain the articulation on one end. Length ranges from 5 cm. to 30 cm.

Bars (Fig. 40, *a-c*, *e*; 41, *b*, *c*). Even more abundant than awls are more or less parallel-sided bars made from ribs or sections of the long bones of mammals. These

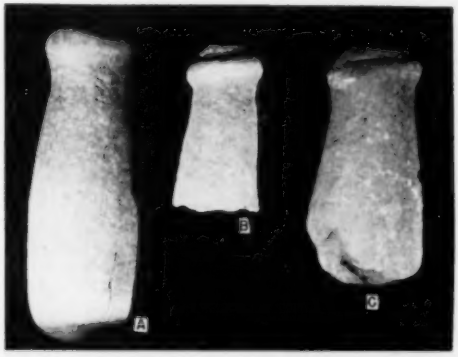

FIG. 42. Sandstone pestles from San Nicolas Island. Length of *a*, 19.3 cm.

range in length from 7 to 33 cm.; the thickness averages about one-third to one-half the width. Specimens to 16 cm. in length commonly show traces of asphaltum on one end indicating use in a haft. The hafted end tapers towards a blunt point (Fig. 41, *b-c*). The used end is normally rounded in both top and side view. These items probably served a multiplicity of uses in food and hide preparation. The larger ones (Fig. 40, *a-c*) were most likely prize bars for securing shellfish such as *Haliotis*.

Bipointed objects (Fig. 39, *b-d*). Slender, flat to round in cross section and measuring 3 to 14 cm. in length. The smaller ones may be gorge hooks or weapon barbs.

Harpoon points. Of simple type, usually single-barbed, and relatively rare. They are adequately described in Bennyhoff (1950, pp. 298, 304).

Needles. Needles are reported but not described by Nelson (1936, p. 203). A double pointed specimen with a slit eye is illustrated in Gifford (1940, p. 218, Fig. P5).

Whistles and flutes. Whistles of bird and mammal bone are surprisingly common (Nelson, 1936, p. 203). Figure 39, *a* bears tiny cuts probably intended as decoration. Gifford figures a flute with at least three stops (Gifford, 1940, p. 213, Fig. GG).

FIG. 43. Stone artifacts, San Nicolas Island. *a*, serpentine tube with incised mark on side; *b*, basalt pestle. Length of *a*, 10.5 cm.

Handle. Figure 41, *a* shows an asphaltum smear all along one side indicating attachment, perhaps as a handle.

Ornaments. Under this heading are various bone pieces suggesting nonutilitarian use as ornaments (Fig. 39, *j*). Sometimes these are decorated with incising or asphaltum with shell inlay. Also used as ornaments and pendants are bird and sea-lion claws (Nelson, 1936, p. 203).

Grave goods. A number of more or less elaborate objects appear to have been used specifically as mortuary offerings. These include:

1. Stone effigies of animals, including whales, sharks, and sea mammals (deCessac, 1951; Moorehead, 1900, p. 237; Vaillant, 1939, pl. 6; Bryan, 1930b, p. 218; Nelson, 1936, p. 202; Hodge, 1922, p. 228).

2. "Hook-shaped stones" which may be highly stylized animal or bird effigies of some kind (deCessac, 1951; passing reference in most of the works just cited).

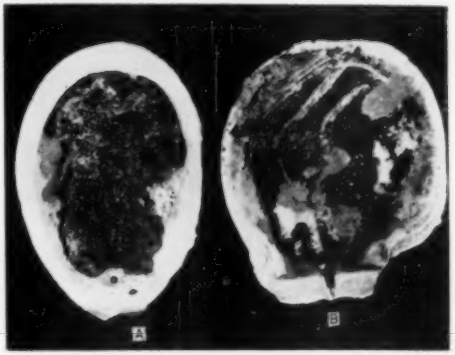

FIG. 44. Shell asphaltum containers from San Nicolas Island. *a*, *Haliotis cracherodii*; *b*, *Hinnites gigantea*. Length of *a*, 11.0 cm.

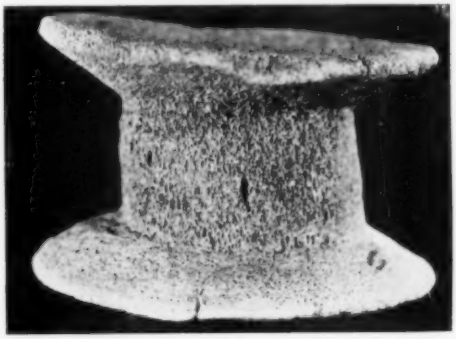

FIG. 45. Spool-shaped object made from whale vertebra, found near head of a burial on San Nicolas Island. Height 8.2 cm.

3. Whale bones, particularly vertebrae and scapulae. These are commonly referred to as "grave markers" but in some cases they occur in the grave with the skeleton (Bryan, 1930b). Discs of whalebone are mentioned as occurring against the faces of burials (Bryan, 1930c, p. 243) and the spool-shaped object illustrated in Fig. 45 was found against the skull of a burial at site 55.

In addition to the above objects, many types of stone and shell beads and pendants have been found with burials.

Foreign artifacts

A number of artifacts of foreign origin have been reported from San Nicolas. The most spectacular of these are of Arctic derivation and, without doubt, resulted from the Aleut incursions of the early 19th century. Included in this category are the following: harpoon foreshaft (Nelson, 1936, p. 201; Fig. 3e), toggle-harpoon heads (Hodge, 1922, p. 229; Leroi-Gourhan, 1946, Fig. 760), wooden spear thrower (Nelson, 1936, p. 201), slate lance point (Nelson, *loc. cit.*), and polished projectile point of shale (Moorehead, 1900, Fig. 358, 5).

Since pottery was not made on the adjacent mainland, the "jar of red clay" reported by Nelson (1936, p. 204) could be an import either from Alaska or from the California desert. Other baked clay objects include a (figurine?) head (Nelson, 1936, p. 204) and a bead (Fig. 39, *n*) similar in size and shape to stone and bone beads collected by the authors (Fig. 39, *l-m*). Burned clay artifacts of this nature occur in the Central Valley as well as the desert.

Intercourse with certain of the other islands and the mainland is clearly indicated by the occurrence of artifacts made of stone not native to San Nicolas, e.g., vesicular basalt, serpentine, obsidian, and soapstone (Cf. Bowers, 1890, p. 58). The closest source of the latter material is Santa Catalina Island some 30 miles to the eastward. The nearest obsidian quarry is north about 125 miles air-line near the coast.

This summary study of the archaeology of San Nicolas Island has attempted to draw attention to San Nicolas as an archaeological area of unusual interest and potential importance. The indications of a very dense aboriginal population, living almost exclusively from the marine resources of a warm sea environment, show a cultural pattern worthy of detailed study. Adequate description of the island's archaeology could not fail to yield information of great value for ecological and demographic studies, as well as important comparative material for analysis of similar marine sites in other parts of the world.

Present indications, based on survey alone, are that San Nicolas supported a minimum population of 600-1200 persons and that the island sustained its heaviest occupation in the few centuries preceding Spanish contact. The artifact complex is notable for abundant use of bird and sea-mammal bone, shell fishhooks, and rather crude chipped stone implements.

BIBLIOGRAPHY

ANONYMOUS

1857. The Indian Woman of San Nicolas. *Hutchings' California Magazine*, Vol. 1, pp. 347-8. San Francisco.

BARTHOLOMEW, GEORGE A.

1951. Spring, Summer, and Fall Censuses of the Pinnipeds on San Nicolas Island, California. *Journal of Mammalogy*, Vol. 32, pp. 15-21. Baltimore.

BENNYHOFF, J. A.

1950. Californian Fish Spears and Harpoons. *University of California Anthropological Records*, Vol. 9, No. 1. Berkeley.

BOWERS, STEPHEN

1890. San Nicolas Island. *Ninth Annual Report of the State Mineralogist*, 1889, pp. 57-61. Sacramento.

BRYAN, BRUCE

1927. Collecting Indian Relics on a Desert Island. *Museum Graphic*, Vol. 1, pp. 145-50. Los Angeles.

1930a. San Nicolas Island, Treasure House of the Ancients: Part I. *Art and Archaeology*, Vol. 29, pp. 147-56. Washington.

1930b. San Nicolas Island, Treasure House of the Ancients: Part II. *Art and Archaeology*, Vol. 29, pp. 215-23. Washington.

1930c. A Treasure Island of the Pacific. *Discovery*, Vol. 11, pp. 240-4. London.

n.d. San Nicolas (Gallas-at) Collection A-1664. Ms. No. 3403 on file in the Bureau of American Ethnology, Washington.

n.d. Notes on the Archaeology of San Nicolas Island. Ms. No. 3403 on file in the Bureau of American Ethnology, Washington.

CLARK, ROBERT

1944. The Thrills of Relic Hunting. *Westways*, Vol. 36, No. 11, pp. 10-11. Los Angeles.

DECESSAC, LEON

1951. Observations on the Sculptured Stone Fetishes in Animal Form Discovered on San Nicolas Island (California). *Reports of the University of California Archaeological Survey*, No. 12, pp. 1-5. Berkeley.

DITTMANN, CARL

n.d. Narrative of a Seafaring Life on the Coast of California. Ms. on file in Bancroft Library, Berkeley.

ELLISON, WILLIAM HENRY (ed.)

1937. *The Life and Adventures of George Nidever, 1802-1883.* Berkeley.

GIBBONS, JAMES M.

1893. The Wild Woman of San Nicolas. *Californian Illustrated Magazine*, Vol. 4, pp. 661-667. New York.

GIFFORD, E. W.

1940. Californian Bone Artifacts. *University of California Anthropological Records*, Vol. 3, No. 2. Berkeley.

1947. Californian Shell Artifacts. *University of California Anthropological Records*, Vol. 9, No. 1. Berkeley.

GLEASON, DUNCAN

1951. *Islands of California.* Los Angeles: Sea Publications.

HARDACRE, EMMA C.

1880. Eighteen Years Alone. *Scribners Monthly*, Vol. 20, pp. 657-64. New York.

HEIZER, ROBERT F.

1949. Curved Single-Piece Fishhooks of Shell and Bone in California. *American Antiquity*, Vol. 15, pp. 89-97. Menasha.

HEYE, GEORGE G.

1921. Certain artifacts from San Miguel Island, California. *Museum of the American Indian, Heye Foundation, Indian Notes and Monographs*, Vol. 7, No. 4. New York.

HODGE, F. W. (ed.)

1922. Guide to the Museum, Second Floor. *Museum of the American Indian, Heye Foundation, Indian Notes and Monographs*, 31. New York.

HOLDER, CHARLES FREDERICK

1910. *The Channel Islands of California.* Chicago: A. C. McClurg and Co.

IRWIN, MARGARET C.

1946. Canalino Fishing Tackle. *Santa Barbara Museum of Natural History, Leaflets*, Vol. 21, pp. 18-21. Santa Barbara.

KROEBER, A. L.

1925. Handbook of the Indians of California. *Bureau of American Ethnology*, Bulletin 78. Washington.

1947. *Cultural and Natural Areas of Native North America.* Berkeley.

LEROI-GOURHAN, ANDRÉ

1946. Archéologie du Pacifique-Nord. *Travaux et Memoires de L'Institut D'Ethnologie*, Vol. 47. Paris.

MOODIE, ROY L.

1929. Deafness among the Ancient Californian Indians. *Southern California Academy of Sciences Bulletin*, Vol. 28, pp. 46-9. Los Angeles.

MOOREHEAD, WARREN K.

1900. *Prehistoric Implements.* Cincinnati.

NELSON, N. C.

1936. Notes on the Santa Barbara Culture. In "Essays in Anthropology Presented to A. L. Kroeber." Berkeley.

NORRIS, ROBERT M.

n.d. Marine Geology of the San Nicolas Island Region, California. Ph.D. thesis, Scripps Institution of Oceanography, La Jolla.

ORR, PHIL C.

1951. Ancient Population Centers of Santa Rosa Island. *American Antiquity*, Vol. 16, pp. 221-6. Salt Lake City.

1952. Review of Santa Barbara Channel Archaeology. *Southwestern Journal of Anthropology*, Vol. 8, pp. 211-26.

PUTNAM, F. W.

1879. Perforated Stones. In "Report Upon United States Geographical Surveys West of the One Hundredth Meridian," Vol. 7, pp. 135-89.

ROBINSON, EUGENE

1942. Shell Fishhooks of the California Coast. *Bernice P. Bishop Museum, Occasional Papers*, Vol. 17, No. 4. Honolulu.

ROGERS, DAVID BANKS

1929. *Prehistoric Man of the Santa Barbara Coast.* Santa Barbara: Santa Barbara Museum of Natural History.

ROGERS, MALCOLM J.

n.d. Report of Archaeological Investigations on San Nicolas Island in 1930. Ms. No. 2104 on file in the Bureau of American Ethnology, Washington.

RUST, HORATIO N.

1907. Archaeological Collections from San Miguel Island, California. *American Anthropologist*, Vol. 9, pp. 656-7. Lancaster.

SCHUMACHER, PAUL

1875. Some Remains of a Former People. *Overland Monthly*, Vol. 15, pp. 374-9. San Francisco.

1877. Researches in the Kjökkenmoddings and Graves of a Former Population on the Santa Barbara Islands and the Adjacent Mainland. *United States Geological and Geographical Survey of the Territories, Bulletin*, Vol. 3, pp. 37-56. Washington.

SMITH, W. S. T.

1900. A Topographic Study of the Islands of Southern California. *Department of Geology of the University of California, Bulletin*, Vol. 2, No. 7. Berkeley.

TENNEY, W. A.

1907. The Hermit of San Nicolas. *Pacific Monthly*, Vol. 18, pp. 23-30. Portland.

VAILLANT, GEORGE C.

1939. *Indian Arts in North America*. New York.

WAGNER, HENRY R.

1937. *The Cartography of the Northwest Coast of America to the Year 1800*. 2 vols. Berkeley.

WALKER, E. F.

1936. A Prehistoric California Treasure Box. *Masterkey*, Vol. 10, pp. 134-6. Los Angeles.

WALTER, PAUL (ed.)

1932. Grass Skirts from San Nicolas. *El Palacio*, Vol. 33, p. 168. Santa Fe.

WHEELER, G. M.

1879. *Report upon United States Geographical Surveys West of the One Hundredth Meridian*, Vol. 7 (Archaeology). Washington.

WHITNEY, J. D.

1865. *Geological Survey of California*, Vol. 1 (Geology). Philadelphia.

WOODWARD, ARTHUR.

1941. Communication to "Notes and News," *American Antiquity*, Vol. 6, pp. 284, 285. Menasha.

YATES, LORENZO G.

1896. The Deserted Homes of a Lost People. *Overland Monthly*, 2nd Ser., Vol. 27, pp. 538-44. San Francisco.

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NEW ARCHAEOLOGICAL CULTURES FROM THE DEPARTMENTS OF CHUQUISACA, POTOSÍ AND TARIJA, BOLIVIA

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VERY LITTLE has been written about the archaeology of central and southern Bolivia, the attention of students having been concentrated on the Tiahuanaco area. I began exploring this great unknown region in 1940-44 and am now continuing the project in my present capacity as Director of the Archaeological Museum of the University of Cochabamba. The present report is a summary of the results of this work to date.

The best described Bolivian culture outside of the Tiahuanaco area is the one called Mizque-Tiahuanaco by Nordenskiöld and Bennett which I am calling Yampará. I have found tombs in an earlier variety of this style without any Tiahuanaco influence. A characteristic of Yampará pottery is the presence of tripod bowls which resemble Mexican ones; this trait is entirely un-Tiahuanacoid.

The Yampará style extends to the whole of the Department of Chuquisaca, except for Cinti and the southern part of Azero, and it occurs also in the Province of Cornelio Saavedra in Potosí. I found the Yampará culture first in Chuquisaca and the vast majority of the finds made there belong to the Yampará style, as for example the collection of Dr. José Felipe Costas Arguedas in Sucre. The last time I saw the Costas Arguedas collection it consisted of over one hundred pieces, all Yampará except for four Inca ones. My collection, on the basis of which the Archaeological Museum of the University of Sucre was established, consisted of 404 pieces, not over half a dozen of which were Inca or Inca influenced. There were also a few Decadent Tiahuanaco specimens and several Huruquilla ones. Except for one article on pottery by Costas Arguedas (1949), little has been published on the Yampará culture beyond newspaper articles by me and by Costas Arguedas.

My first investigations in 1940 were made in part in company with Carlos Ibarra Grasso; then, in 1942 and 1943, I worked in Chuquisaca and Potosí, often with Pedro Juan Vignale, with whom I published two short studies. Our work on the Yampará culture was extensive, including the recording of 42 sites, in several of which we made excavations. A detailed report of this work will be published at some future date.

The rest of central and southern Bolivia was occupied by a series of local cultures much poorer than the Yampará. When I first studied them, I was thinking in evolutionary terms and supposed them to be much older than the Yampará culture. I now consider them more recent and attribute their poverty to the fact that this area was a cultural backwater. There is no direct evidence for dating them. These poorer cultures include the Yura, Chaquí and Huruquilla, which are described below. I append also some notes on the cultures of Tarija, Lipez and Chichas.

Yura. The Yura culture is found mainly in the Province of Porco (Quijarro), with an extension into the southwestern part of the Province of Frias. The French expedition which explored this area at the beginning of the century made a collection consisting chiefly of Yura specimens which they called simply "Quichua" (Créqui-Montfort, 1906a, plates VII-VIII; 1906b, pp. 543-4). The tombs in Yura cemeteries are cysts, built sometimes with one side against a rock; at a site on the Finca Cayara there is another type of tomb, pits dug in a dune. The skulls found here represent only men. Little worked stone is found; chiefly axes, bolas weights, and hoe blades resembling those of the French Campignian. The pottery is very characteristic, but shows resemblances to Huruquilla; most of the known examples are fine funerary ware. Among the finest pieces are ones which I call "bell beakers," 12 to 15 cm. high with a narrow base, flaring sides, and a reentrant lip. These beakers are painted black on the plain red of the clay with geometric designs, chiefly triangles, forming a central band. There are usually three triangles above, with the points down, and three below filling the spaces between the first three; the triangles are separated by a thin straight line or two. The triangles enclose an ovoid or triangular space containing dots, S-shaped elements, or crosses (see Fig. 46, *c*).

* Translated and abridged by John H. Rowe, with omission of some interpretive passages the substance of which have already been published. See Ibarra Grasso (1952).

The pucos or bowls of this style are similar but have a shorter foot and different designs, notably elements in the shape of an E arranged in pairs back to back, and an angular S. There are also some small jars with tubular spouts and a bridge to the neck; they have globular bodies painted in the same style as the other types. This shape probably represents Tiahuanacoid influence transmitted via the Yampará style.

At the edge of Yura territory I found twelve ancient textiles in a looted tomb; it is not certain whether they belong to the Yura culture or to the Chaquí. They are now in the Archaeological Museum of the Casa de Moneda of Potosí. The textiles include ponchos, shawls, tunics, etc. of llama and vicuña wool decorated in vertical stripes in several colors. Some of the colors are natural shades of wool, others represent dyes. This is the biggest find of ancient textiles that has been made in Bolivia.

There are over thirty specimens of the Yura culture in the La Paz museum, some with the type of decoration described above, others displaying step motives which I attribute to Decadent Tiahuanaco or Colla influence. Debenedetti (1912) took these pieces to be pure Tiahuanaco and used them as evidence to support his theory of Tiahuanaco influences in Argentina.

Chaquí. The Chaquí culture centers in Frias Province, all around the city of Potosí. There are a number of ruined towns of this culture located on the Fincas of Cayara, Totora, Chaquí and others. These towns are small settlements, the largest buildings of which are only a group of three stone rooms like the rectangular chullpas (burial towers) of the Altiplano. There are also some rough Kalasasaya type structures. There is an oval one on the Finca Rosario built of small stones with four entrances marked by larger stones. Another, on the Hacienda Mondragón, stands on top of an enormous rock which is now very difficult to climb. It is circular, and built of large field stones with a larger one still in the center.

The cemeteries of the Chaquí culture are located near the settlements. They contain shallow cyst burials, often marked by a small stela, simple and without ornament. There are always several individuals buried in each grave, along with grave goods consisting of cooking pots and plain bowls like those found in the ruins of the settlements. The Chaquí culture does not appear to have a separate funerary style. Some copper objects have been found in Chaquí territory. Some of the sites have no Inca objects, while in others Inca pieces are abundant. The stone objects are made in simple shapes, and grooved axes, bolas weights, and hoe blades like the Yura ones are the usual types found. Arrowheads are not found in sites of this culture, or indeed in those of any of the cultures of this region.

Pottery shapes are very simple and the vessels are not especially large; the water jars, for example, are less than 50 cm. high. The commonest specimens are pucos (bowls) of relatively small size, and these are almost the only ones carrying a painted decoration. They have a coating of unpolished white clay, like a solution of lime, on top of which are some slightly curved lines executed in reddish paint which look as if they had been smeared on with three fingers. The lines are about 5 cm. long. This motive is repeated three to five times around the bowl, and often occurs on the interior (see Fig. 46, *d*).

Other bowls have black paint, and in this case the designs are still simpler and the white

Fig. 46. *a*, Yampará jug, black paint outlined in white on a red slip; *b*, Chicha style jar, from Camargo, design in black on the reddish surface of the clay; *c*, Yura "bell beaker," design in black on the reddish surface of the clay; *d*, Chaquí puco (bowl), design in red on an unpolished white ground; *e*, Huruquilla puco (bowl), design in black on a grayish white ground.

slip is not used. Some specimens are dark brick red; most of them lack all decoration and paint. On the big water jars we find a simple design of crossed or sometimes wavy lines in red and yellowish ocher. There are also small jars with tubular spouts, which are rarely decorated; at the most they are painted white on the neck and upper part of the spout. The cooking pots are pear shaped, 18-20 cm. high, with two vertical handles on the upper half.

In one small jar, found in a cemetery associated with Inca-influenced remains, were found a number of small ears of corn, carbonized with age, as well as some dehydrated potatoes (chuño). These perishable remains were preserved because the jar was inverted; they probably represent offerings to the dead.

Huruquilla. The Huruquilla culture extends across the Province of Linares, northern Nor-Chichas, a small part of eastern Frias, and perhaps a bit of the eastern part of Porco, in Potosí, and the greater part of northwestern Cinti in Chuquisaca. Isolated Huruquilla finds occur all through the Yampará area of Chuquisaca, but the chronological relationship of the two styles has not been established. There is also Yampará influence in Huruquilla territory, suggesting at least partial contemporaneity. The few Huruquilla skulls found to date are all dolichocephalic. The pottery shares many traits with Yura and shows some resemblances to Chichas. The Chaquí culture is different from all three of these.

No temples have been found in Huruquilla territory except for two Inca ones. The settlements are on hills and consist of small houses. The cemeteries are nearby and consist of shallow cyst tombs or pits lined with stones and provided with a stone slab roof.

The pottery displays a variety of shapes. The decoration is geometric and is done with paint; the only modeled ornament is a face on the neck of some jars, consisting of added pellets of clay to represent the eyes, nose and mouth. The mouth is sometimes omitted. This modeled ornament is lacking in all the cultures of the Department of Potosí but appears in Yampará.

The paste is often an ash gray color and is sometimes as light as porcelain. This is the only known Bolivian culture which uses this type of paste. The usual red paste is also found, and reddish and pinkish slips are used. The painted designs are done in black paint which sometimes has a sepia tint. There are bell beakers like the Yura ones but wider; also small jars with tubular spouts and several varieties of bowls. The decorative motives are without exception geometric and are usually more complex than Yura ones. A characteristic detail is the common use of "eyes" as space fillers. These "eyes" are made of several curved lines, sometimes forming a flattened spiral and other times concentric ovals (see Fig. 46, *e*). There are local variations in the designs, sometimes fairly considerable ones; some are more like Yura designs while others are quite different. There is no correlation between geographical proximity to Yura and similarity.

In 1941 I made a brief visit to Tarija, visiting some sites and looking at private collections. What I saw suggests a culture related in some degree to Huruquilla and Yura, but rather different in its stone work, which includes finely made dishes and bowls. Many of these show Inca influence, but others seem to be earlier. Also notable are very fine carved stone pipes, of which I saw two, and some small flat circular or oval stones with incised designs, some of which may have been beads and others spindle whorls. The pipes cannot be Inca, as this culture lacks pipes. I collected one pipe in Mizque and saw another one there. They also occur in the "Draconian" (Barreales) style of northwestern Argentina.

At the site of El Sayre I saw a stone stela 1.20 cm. high, shaped roughly like a post with one side only smoothed and with designs in reddish paint which were preserved because the stone lay face down on the earth.

I have not visited the provinces of Lipez, but Vignale brought me from Colcha a collection of sherds found around the great group of stone chullpas there. The shape and color of these sherds are reminiscent of the Chaquí culture, which also has chullpas.

The pots described by Métraux (1933) are from the historic Chicha territory. Some of the bowls resemble Huruquilla and Yura ones, but the designs are different. Bennett, in his summary (1936, p. 390), says that they have a grayish-white paste, a statement which suggests relationships with Huruquilla. Other pieces show Inca influence.

Chicha pottery has a red paste with simple geometric designs in black paint. The shapes and designs show some resemblances to those of Yura and Huruquilla, but also many dif-

ferences. The geometric designs are simple. There are some crude heads on the rims of the cups, made by adding bits of clay. I have seen some distinctive metal specimens.

I have seen also several funerary urns, some for infant burial, like those of Huruquilla territory, others very large and providing a link between the urns of Clisa and Colcapirhua in Cochabamba on the one hand and those of northwestern Argentina on the other.

One of the most distinctive features of Chicha ceramics is that the designs on the great majority of the pots are arranged in three equal areas, while all neighboring cultures have two design areas on the outside and two or four on the inside of the bowls. The pottery of Humahuaca also shows a predominance of three design areas in the inside of bowls.

Although the whole area was conquered by the Incas, and sites with Inca influence are found, this influence is not heavy in the pottery and purely Inca pots are rare. Inca temples have been found in several places: San Luis in Cinti, Oroncota on the Pilcomayo, Tomina, etc. The handsomest of these temples are the two at Oroncota which are in an excellent state of preservation. Both have trapezoidal plans some 70 m. long by 25 m. wide, much like the building at Lunahuana in the Cañete Valley, Peru.

A new problem was raised by the discovery of pots in the La Paya-Inca style in Bolivia. This style was first reported from northwest Argentina, where it was interpreted as a mixture of local Diaguita style with Inca. More recently it appeared, according to Métraux (1933) and Bennett (1936), that this style occurs also at Culpina in Cinti and at various sites in Cochabamba. I have found additional examples of it in Cochabamba, and only two days ago saw other specimens in this style from the Department of La Paz in the La Paz museum. In my opinion, this style is related to Colla, and may represent settlement of Colla colonists further south by the Inca rulers.

BIBLIOGRAPHY

Bennett, Wendell Clark

1936. Excavations in Bolivia. *Anthropological Papers of the American Museum of Natural History*, Vol. 35, part 4, pp. 327-507. New York.

Bini Frias, Honoria

1951. Vasos Huruquillas de la Colección Paz Posse. *Ciencia Nueva*, año II, tomo I, no. III, junio, pp. 53-55. Tucumán.

Costas Arguedas, Jose Felipe

1949. Descripción de algunos ceramios Yamparà (Chuquisaca, Bolivia). *Revista del Instituto de Antropologia*, Vol. 4, pp. 325-9. Tucumán.

Créqui-Montfort, G. de

1906a. Fouilles dans la nécropole préhispanique de Calama. Les anciens Atacamas. Internationaler Amerikanisten-Kongress. *Vierzehnte Tagung*, Stuttgart 1904. Zweite Hälfte, pp. 551-65. Verlag von W. Kohlhammer, Stuttgart.

1906b. Fouilles de la mission scientifique française a Tiahuanaco. Ses recherches archéologiques et ethnographiques en Bolivie, au Chili et dans la République Argentine. Internationaler Amerikanisten-Kongress. *Vierzehnte Tagung*, Stuttgart 1904. Zweite Hälfte, pp. 531-50. Verlag von W. Kohlhammer, Stuttgart.

Debenedetti, Salvador

1912. Influencias de la cultura de Tiahuanaco en la region del noroeste argentino. *Revista de la Universidad de Buenos Aires*, tomo XVII, pp. 326-52. Buenos Aires.

Ibarra Grasso, Dick Edgar

1950. Nueva interpretación sobre la arqueología del noroeste argentino. *Ciencia Nueva*, año I, tomo I, no. I, pp. 11-37. Tucumán.

1952. La arqueología boliviana. *Ciencia Nueva*, año III, tomo I, no. 4, julio, pp. 7-22. Cochabamba.

Ibarra Grasso, Dick Edgar, and Ibarra Grasso, Carlos

1950. La colección arqueológica Paz Posse. *Ciencia Nueva*, año I, tomo I, no. II, pp. 21-54. Tucumán.

Métraux, Alfred

1933. Contribution a l'archéologie bolivienne. *Journal de la Société des Américanistes*, n.s., tome XXV, fasc. 2, pp. 279-91. Paris.

Nordenskiöld, Erland

1917. Die östliche Ausbreitung der Tiahuanacokultur in Bolivien und ihr Verhältnis zur Aruakkultur in Mojos. *Zeitschrift für Ethnologie*, 49. Jahrgang, Heft 1, pp. 10-20. Berlin.

1924. *Forschungen und Abentauer in Südamerika*. Strecker und Schroeder, Stuttgart.

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THE SOUTHERN CULT IN THE NORTHERN PLAINS*

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RECENTLY RENEWED INTEREST has been focused upon the occurrence in the Plains area of the archaeological complex often termed the "Southern cult." This complex is found over a wide geographic area and in association with varied cultures. It occurs throughout the southeastern United States, and extends north and west along the Mississippi and Missouri River valleys. It has been found in eastern South Dakota, eastern North Dakota, and in the provinces of Manitoba and Saskatchewan in Canada.

The complex is characterized by specific art motifs and ceremonial objects, including mask-like whelk shell gorgets, and the cross, forked-eye, and hand-and-eye motifs. The complex was apparently fundamentally dependent upon a horticultural base, and is associated in nearly every case with platform mounds. Sites often thought of in connection with the Southern cult are Etowah (Georgia), Moundville (Alabama), and Spiro (Oklahoma). The author has recently examined materials in the collections of the North Dakota State Historical Museum for artifacts related to the complex. The Heimdal mound, from which much fine Southern cult material was recovered, was also visited.

The collections yielded materials from three sites in North Dakota, including the Heimdal mound, which are typically Southern cult in type. A spirally decorated pot from a mound near Montpelier, North Dakota, is identical with those found in association with Southern cult materials in sites in North and South Dakota and Canada, though no typically Southern cult material was found in association with it. Vessels from the Wray mound, near Lisbon, North Dakota, on display in the North Dakota State Historical Museum and excavated by E.A. Milligan, are identical in size, shape and lip decoration with the spirally decorated vessels of the Southern cult bearing culture, though the spiral groove decoration is replaced with a design reminiscent of the Southern cult hand-and-eye motif. It is the purpose of this paper to describe the material from the first four sites mentioned above and tentatively to define the Southern cult bearing culture of the Northern Plains.

None of the Southern cult material in the North Dakota State Historical Museum was collected by trained personnel. In only one case do we have a stratigraphic diagram of the mound or site (Heimdal). The material is merely presented for what it may be worth in defining the Southern cult complex and the culture which bears it in the Northern Plains.

THE HEIMDAL MOUND

The Heimdal mound is located in the NE¼ of Sec 23, T 150, R 70, about 3 miles northeast of the village of Heimdal, in Wells County, North Dakota. This area is typical of the poorly drained glaciated terrain characteristic of much of Minnesota and eastern North and South Dakota. The mound itself is located on the summit of a high hill, the highest within a 10 mile radius.

The mound was excavated in 1930, by Joel A. Johnson and Oscar E. Johnson. At that time the mound had recently become popular with local relic hunters, who threatened to ruin it completely. The Johnson brothers, interested in salvaging what information they could before the mound was destroyed, wrote the State Historical Society for instructions.

Having no archaeologist available for the work at that time, the Historical Society asked the Johnson brothers to undertake the work

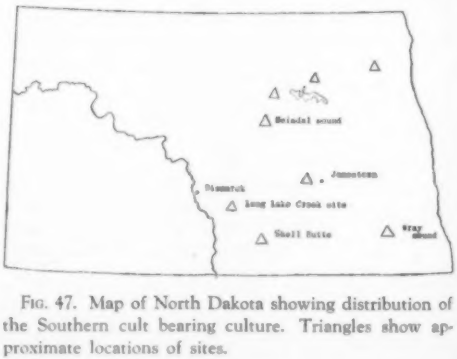


FIG. 47. Map of North Dakota showing distribution of the Southern cult bearing culture. Triangles show approximate locations of sites.

* For advice and assistance on copper and sinew, we are indebted to Floyd Roberts of the North Dakota State Laboratories Department, Bismarck and to Roy W. Drier, Michigan College of Mining and Technology, Houghton, Michigan.

themselves, which they did after securing the owner's consent. The land containing the mound was owned by Peter J. Myhre at the time of the excavation in 1930. It is now (1953) owned by Andrew Larson, of Maddock, North Dakota. Although neither of the brothers had had any archaeological training, they did a creditable job of excavation. The material recovered, and the maps which were made, are now in the collections of the North Dakota State Historical Museum.

The mound is approximately 40 feet in diameter and 2 feet 9 inches in elevation. It is composed of earth and stone from the surrounding area. The following items were recovered from the mound (the numbers given are the museum accession numbers).

4307 Collar (?) of elk antler in two pieces
4308 Eagle bone whistle
4309 Straight catlinite pipe
4310 Fragment of a mussel shell
4311 Fossil horn coral fragment
4312 Whelk shell gorget
4313 Whelk shell gorget
4314 Spiral bead or pendant of whelk shell
4315 Spiral bead or pendant of whelk shell
4316 Six potsherds
4317 Fragmentary human skull (missing)
4318 Fragmentary human skull
4319 Human calvarium, vertebra, right and left pelvic bones, sacrum, right and left femora, right tibia, left scapula, left humerus, right radius, and right and left fibulae
4320 Human calvarium
4321 Fragment of a bison skull, four teeth, scapula, five ribs, fragment of a vertebral spine, fragment of a caudal vertebra, two unidentifiable bone fragments, and a fragment of a human femur (this presumably belongs with 4317, 4318, or 4320)
4322 Skull of a skunk

4307 Collar (?) of elk antler in two pieces. This object has been called a "collar," though it may have served a very different purpose. Fragments of what appear to be similar or related objects, found in Canada and North Dakota, are pictured by Montgomery (1906, pl. 34, opp. p. 648; and 1908, p. 37), who calls them "bone anklets."

The Heimdal objects are of a size and shape which would have allowed them, when laced together, to be used as a collar. Each section measures 270 mm. maximum length x 135 mm. maximum width. The two sections are bilaterally symmetrical in form and decoration. This collar was apparently made by cutting and molding thin sections of elk antler while it was still green and pliable. Small holes, such as could be used for lacing, are drilled at either end of each piece. Additional holes, two through the middle section and one on the lower margin of each piece were probably used for attaching ornaments.

Each section of the collar has a realistic drawing of a bison incised upon it. These bison are done in a distinctive angular style, with diamond shaped eyes and an arrow shaped "line of life" extending from the animal's nose to the center of his body. This line of life is probably a representation of the throat, lungs, and heart of the animal. A similar, but smaller scale attempt to represent the animal's interior occurs at the anus. This convention for representing an animal's inner organs persisted in Indian art into historic times.

Each section of the collar, in addition to the bison drawing, has a geometric border design consisting of a deeply incised line, in some places cut so deeply as to go entirely through the collar, within which triangles are incised. Similar triangles occur on one of the "bone anklets" figured by Montgomery (1906, pl. 34, opp. p. 648). The representation of the bison on this collar is strikingly similar in style to a bison incised on a catlinite tablet recovered by Montgomery from a mound in North Dakota (1906, pl. 32, opp. p. 644).

4308 Eagle bone whistle. This whistle is made of an eagle wing bone, *Aquila chrysaetos Canadensis*. It measures 217 mm. in length and 13 mm. is the average diameter. A triangular hole is cut near the proximal end. The whistle is similar in every respect to those used at the present time by Plains tribes in the sun dance and peyote ceremonies.

4309 Straight catlinite pipe. This pipe resembles a present day cigar holder. It measures 217 mm. in length. The diameter of the pipe at the larger end is 22 mm., and at the smaller end 17 mm. A charred cake, presumably tobacco, is still present about the larger end of the pipe. Pipes similar to this one were

found by Montgomery in mounds in North Dakota (1906, pl. 33, opp. p. 646) and Canada (1908, pl. 4, opp. p. 36).

4310 Fragment of a mussel shell. This shell is of the genus *Unio*. It measures 70 x 50 mm. Finds of *Unio* shell in mounds are reported by Montgomery in Canada and North Dakota (1906; 1908).

4311 Fossil horn coral fragment. This consists of a fossil fragment of the horn coral *Hapsiphyllum calcariforme*, including the calyx. The fragment measures 50 x 30 mm. It is probably Ordovician or Silurian in age. It may have been kept as a "medicine" stone by one of the persons buried in the Heimdal mound.

4312 Whelk shell gorget. This gorget is made from a pear shaped section of the outer whorl of the shell of a whelk, *Fulgur perversum* L. It is obviously intended to represent the face of a human or an anthropomorphic bird. It measures 162 mm. in length x 128 mm. maximum width. It is definitely Southern cult in type and has the weeping eye motif. The gorget is slightly fractured on the lower left edge.

On the reverse of the gorget is a scratched drawing of an elk with the same diamond shaped eye used in the drawing of the bison on the elk antler collar (4307). Four smaller designs, resembling designs used by Indians in historic times to represent stars, also occur on the back of the gorget.

4313 Whelk shell gorget. This gorget, like 4312, is made from a pear shaped section of the outer whorl of a whelk shell. It has a deep scallop cut from the top, but is otherwise nearly identical in form and face decoration with 4312. The gorget measures 162 mm. in length x 128 mm. maximum width. The lower left edge of the gorget is slightly fractured.

The weeping eye motif occurs on the face of the gorget and scratched drawings are found on the reverse side. These drawings are so faint as to be almost undetectable unless the object is moved slightly from side to side under good light. One of the drawings may be a representation of a swallow or some other bird in flight.

4314 Spiral bead or pendant of whelk shell. This ornament is made from the core or axis of the shell of a whelk, *Fulgur perversum* L. The object measures 168 mm. in length x 13 mm. maximum diameter. Holes are drilled, apparently for suspending the object, at either end.

4315 Spiral bead or pendant of whelk shell. This ornament is similar to 4314. It is 205 mm. in length and has a maximum diameter of 15 mm. Holes are drilled at either end, apparently for suspending the object, and one end is grooved, probably for the same purpose, in addition.

4316 Potsherds. These six potsherds were the only ceramic material found in the Heimdal mound. They are all body sherds. The average thickness of these sherds is 7 mm. They are grit tempered, of medium texture, with a hardness of from 3-4. They are uniformly reddish-gray in color. Five of the sherds are fairly smooth, inside and out, and show signs of having been wiped with a handful of dampened grass prior to firing. The sixth sherd is smooth on the inside but shows a heavy basketry or textile impression on the outer surface.

4318 Fragmentary human skull. Only the sub-orbital and alveolar regions are present. The skull seems to be that of an adult male. The skull has an impacted (?) tooth in the center of the palate near the intermaxillary suture. The teeth are large and well worn.

4319 Human calvarium, vertebra, right and left pelvic bones, sacrum, right and left femora, right tibia, left scapula, left humerus, right radius, and right and left fibulae. All of these bones presumably belong to the skeleton of one individual. According to the maps prepared by the Johnson brothers, burials 4319 and 4320 were found in the humus below the mound, which represents the original surface of the hilltop. They were found one foot below the surface of this original topsoil, or three and one-half feet beneath the surface of the top of the mound. This seems to indicate that the mound was built after the burial took place. The bones are quite obviously those of an elderly man. The cephalic index of the skull is 80.2 (brachycephalic).

4320 Human calvarium. This skull is also that of an old man. The cephalic index is 71.3 (dolichocephalic).

4321 Fragment of bison skull, four teeth, scapula, five ribs, fragment of vertebral spine, fragment of caudal vertebra, two unidentifiable bone fragments, and a fragment of a human femur (this presumbly belongs with 4317, 4318,

or 4320). None of these bones are worked. Presumably they were recovered in the mound fill, and not buried in the original surface of the hill as were the human burials 4319 and 4320.

4322 Skull of a skunk. This is the skull of a skunk, *Mephitis mephitis*, an animal common in North Dakota at the present time. The provenience of this skull is not indicated on either of the maps prepared by the Johnson brothers. Presumably it was recovered in the mound fill and may well be intrusive.

THE BENTZ GORGETS

Little is known of the provenience of these gorgets except that they were found eroding out of the bank of Long Lake Creek, five miles south and one and one-half miles west, T 136, R 76, of Moffit, North Dakota, in 1930. They were loaned to the North Dakota State Historical Museum by Agnes Bentz of Moffit on September 8, 1930, and are cataloged with the museum loan accession number L236.

L236a Whelk shell gorget. This gorget, like those found in the Heimdal mound, is made from a pear shaped section of the outer whorl of the shell of a whelk, *Fulgur perversum* L. It is virtually identical in form and shape with the Heimdal gorgets, and has the weeping eye motif on its face. It measures 190 mm. in length x 140 mm. maximum width. On the reverse side there are traces of scratched drawings but these are now nearly obscured due to the disintegration of the shell. A slight copper stain is present on the reverse of the gorget.

L236b Whelk shell gorget. This specimen is quite similar to L236a. No weeping eye motif is detectable on the face of the gorget at the present time, but since the surface of the shell is quite flaky, even a deeply incised design could have powdered away. The specimen measures 180 mm. in length x 165 mm. maxi-

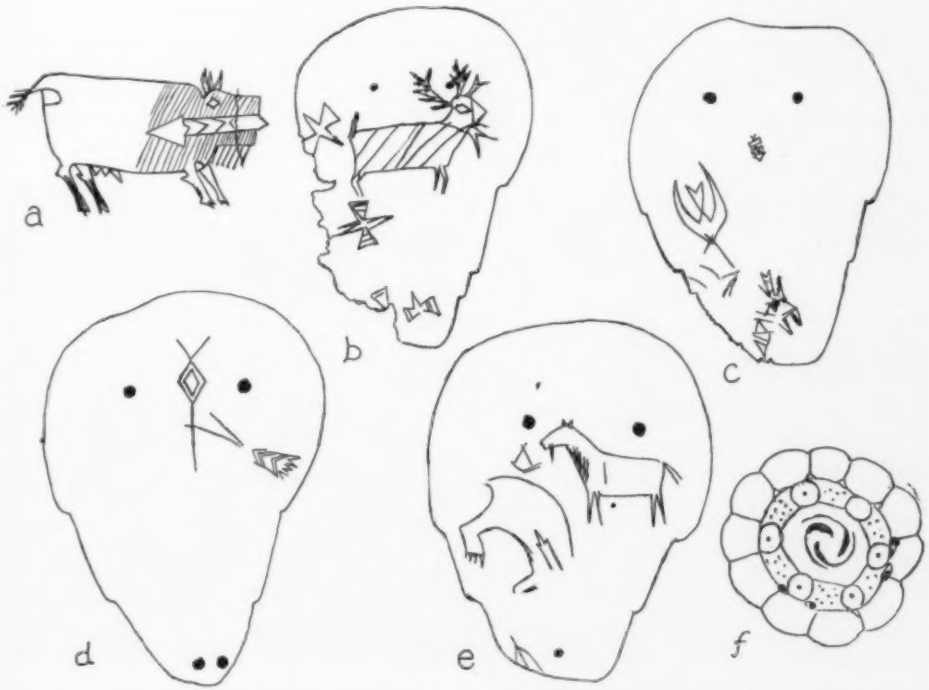


FIG. 48. *a*, detail of incised drawing of bison from the Heimdal "collar," 4307; *b*, drawing on reverse of Heimdal gorget, 4312; *c*, drawing on reverse of Heimdal gorget, 4313; *d*, drawing on reverse of Bentz gorget L236a; *e*, drawing on reverse of Bentz gorget L236c; *f*, incised decoration on face of Doerr gorget; *d* is 7½ inches long.

mum width. Scratched drawings appear to have been present on the reverse of the gorget at one time but have been obliterated by the disintegration of the shell. A slight copper stain is present on the reverse.

L236c Whelk shell gorget. This gorget is similar in most respects to L236a and L236b and to the Heimdal gorgets. It measures 170 mm. in length x 137 mm. maximum width. No weeping eye motif is discernible on the face of the gorget but such a design may well have been obscured by flaking of the shell's surface. On the reverse of the gorget are two scratched drawings. One of these is clearly a horse. The other was probably a bear, although its head has now been obliterated by the disintegration of the shell. A slight copper stain is also present on the gorget's reverse.

Naturally the discovery of a representation of a horse on a gorget of a supposedly prehistoric type occasioned a great deal of interest at the time the gorget was found. The gorget was immediately sent to Clark Wissler, then at the American Museum of Natural History, for study and comment. Wissler's reply indicated that he believed the gorget to be of late historic origin. This idea was based, apparently, almost entirely on the presence of the horse pictograph.

L236d Copper lining for gorget. This is a very thin piece of sheet copper, used as a "lining" on the reverse side of one of the three gorgets described above. It measures 120 mm. maximum length x 90 mm. maximum width. It is slightly curved to fit the inside of the gorget and has a perforation for attaching it to the gorget near one corner.

An analysis of this specimen and specimen L236e revealed a copper content of 99.9% ± 0.1. Due to the size of the specimens it was not possible to determine the identity of the other minerals or impurities present without destroying them completely. The copper is probably native, since copper as mined is frequently purer than after smelting (i.e. European trade copper).

L236e Copper lining for gorget. This sheet of copper is larger and more complete than L236d. It measures 145 mm. maximum length x 111 mm. maximum width. It clearly served as a lining for one of the whelk shell gorgets described above. It has four perforations around the outer margin, probably for attaching it to the gorget. In the center of the piece a slot has been cut, and a small additional strip of copper inserted and bent over on each side, as if to simulate the nose on a face.

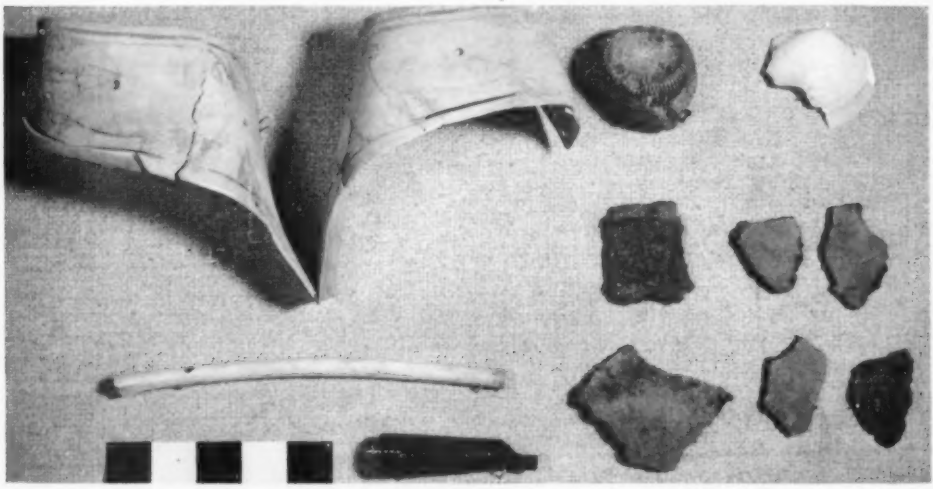


FIG. 49. Material recovered from the Heimdal mound. Upper left, 4307, collar (?) of elk antler in two pieces; lower left, 4308, eagle bone whistle; 4309, straight catlinite pipe; upper right, 4311, fossil horn coral fragment; 4310, fragment of a mussel shell; lower right, 4316, six potsherds: sherd at bottom right shows a heavy textile or basketry impression. Scale pictured is in one inch units.

L236f Sinew. A small piece of sinew was found with the gorgets and copper, undoubtedly serving to fasten one of the gorgets to its copper lining.

THE DOERR GORGET

The Doerr gorget (Museum catalog No. 10760) was found on Shell Butte, in Logan County, North Dakota. It was purchased by the North Dakota State Historical Society from John Allen Doerr of Napoleon, North Dakota, in 1947. We have no other information relative to the gorget.

The gorget is made from the outer whorl of a whelk shell but is circular, rather than pear shaped, and has a scalloped edge. It measures an average of 100 mm. in diameter. In the center of the gorget is a cut out triskelion, or three-limbed design. Four small holes, in pairs, are drilled near the margin of the shell, and were undoubtedly used for suspending the gorget.

A fine, typically Southern cult design is incised on the concave surface of the gorget. This is probably a conventionalized rattlesnake. The gorget is virtually identical in design with two gorgets pictured by Holmes in his "Art in Shell of the Ancient Americans" (Holmes, 1883, Pl. 54, opp. p. 274; Pl. 55, opp. p. 276). Both of the gorgets pictured by Holmes were found in mounds near Nashville, Tennessee.

FIG. 50. Material recovered from the Heimdal mound. Left, 4312, whelk shell gorget; right, 4313, whelk shell gorget; bottom, 4315, spiral bead or pendant made of the axis of a whelk shell; 4314 (below 4315), spiral bead or pendant made of the axis of a whelk shell.

THE MONTPELIER MOUND MATERIAL

This material consists of a spirally decorated pottery vessel, nearly complete (Museum catalog No. L389), two fragments of wood, a scrap of hide, and a small piece of copper. Although no typically Southern cult artifacts were found in association with this material, Montgomery found similar pottery in association with Southern cult material in North Dakota and Canada

FIG. 51. The Bentz gorgets. Upper left, L236a; upper right, L236b; bottom, L236c. Scale is in one inch units.

FIG. 52. The Doerr gorget. Scale is in one inch units.

(Montgomery, 1906, pl. 31, opp. p. 642; 1908, p. 34, pl. 3, opp. p. 34).

The vessel and associated material were lent to the State Historical Museum in 1931 by Dana Wright, of St. John, North Dakota. A rather cryptic information card in the museum files supplies the only information regarding the material and the mound in which it was found. The card reads:

> Indian pottery found six feet under ground under a mound near Montpelier, N. Dak. by Bunny Reed.* Inside the dish was found a dried scrap of buckskin wrapped around some fragments of copper ore.
>
> Scraps of decayed wood were found in the bottom of the mound and an arrow point which shows the action of fire.
>
> There were indications that there had been a fire possibly for cremation or other ceremony and that the mound had been built up over the place after.

The card is signed "Dana Wright."

The pot is probably part of a funeral offering. It has a maximum body diameter of 115 mm. and measures 95 mm. at the mouth of the vessel. It is 90 mm. tall. The average thickness of the vessel is 5 mm. The ware is grit tempered, of fine texture, and has a hardness of 4.5. It is reddish-gray in color.

The form of the vessel approaches a globe, but is cut off three-fourths of the way to the top by the short neck and rim (20 mm. in height). The neck is flared very slightly. The rim has a line decoration on its lip which is broken by dots where two small lugs, on opposite sides of the rim, are present. On one side of the vessel this incised lip decoration is filled with red paint. A spiral groove decoration, starting at the bottom of the vessel, winds around it in a continuous line to the neck. The vessel apparently contained some food or liquid at one time, since traces of some material still coat the inside.

Within the pot are two small pieces of wood, measuring 60 mm. x 20 mm. x 10 mm., and 25 mm. x 15 mm. x 7 mm., respectively. These are presumably some of the "scraps of decayed wood" which were found "in the bottom of the mound," and were not in the vessel when it was found. They may represent wood from a log burial vault. A dried scrap of hide, 50 mm. x 40 mm., and a small flat piece of copper 13 mm. x 10 mm., also in the vessel, are presumably those found there when the pot was recovered.

A few remarks concerning the artistic motifs and cultural resemblances of the above described material may be pertinent at this point. We are dealing, it seems, with a fairly homo-

* The identity of "Bunny Reed" has not yet been ascertained. He or she is presumably a local amateur.

a *b*

FIG. 53. Pottery vessel recovered from the Montpelier mound. *a*, lateral view of vessel; *b*, basal view of vessel showing spiral decoration. Scale is in one inch units.

geneous culture, certain traits of which seem to be identical with those found in the Southern cult in the Southeast. This northern manifestation may be either a peripheral extension of the Southern cult civilizations or an echo in a neighboring culture which had considerable trade with southeastern groups and thus acquired the use of whelk shell gorgets, mound building, and other traits.

The Southern cult bearing culture of the Northern Plains, represented by the Heimdal and Montpelier mounds and the mounds excavated in North Dakota, South Dakota, Manitoba, and Saskatchewan by Montgomery seems to be characterized by the following traits: mound building, burial in mounds or raising of mounds above burials, use of copper, bison hunting, utilization of molluscs, use of whelk shell gorgets of Southern cult type, scratched drawings on the back of these gorgets, use of pendants or beads made from the spiral axes of whelk shells, use of straight "cigar holder" shaped catlinite pipes, use of incised catlinite tablets, and use of elk antler "collars" and/or "anklets" with incised designs. Art motifs which appear to be characteristic are: bilateral symmetry in much of art work, incision of certain "key" lines so deeply as to completely penetrate the object being decorated, "line of life" conventionalization on many animal representations, frequent use of a diamond shaped figure to represent the eye of an animal, tiny legs on animal representations in comparison to the other parts depicted, and characteristic rectangular bodies on animal representations (see illustrations).

The Heimdal collar and gorgets and the Bentz gorgets seem to be clearly affiliated. All of the gorgets not only have the same form but also have scratched drawings on the reverse which are similar in style. It seems fairly obvious that the bison drawings on the elaborate Heimdal collar are of the same cultural tradition as the scratched drawings of the elk on the reverse of the Heimdal gorget 4312, and the bison on the catlinite tablet figured by Montgomery (1906, pl. 32, opp. p. 644). Furthermore the diamond shaped eye convention, found on both the Heimdal bison drawings and the elk drawing, is common on typical Southern cult artifacts from the Southeast.

The scratched drawings on the back of the Heimdal and Bentz gorgets do not seem to be done as well as the fine "bird men" and woodpeckers seen on the best Southeastern work, yet the bilateral symmetry seen on the Heimdal collar, the use of the diamond shaped eye convention, and the technique of incising certain lines so deeply as to completely pierce the object decorated are all typical Southern cult features.

The horse on the Bentz gorget L236c, cannot, in the author's opinion, be written off as "a later addition by some wandering Plains Indian who picked up the gorget." It is too similar in style and treatment to the bear appearing on the same gorget, to the elk on the Heimdal gorget 4312, and to the bison drawings on the Heimdal collar and on the catlinite tablet found by Montgomery. It seems rather unlikely that all of the gorgets found thus far would have similar drawings scratched on their reverse sides, all done by "some wandering Plains Indian who picked up the gorget" in late historic times.

We are therefore forced into one of three conclusions:

(a) The animal represented is not a horse.

(b) Horses were known in North America at a much earlier date than is now suspected.

(c) The Southern cult bearing culture of the Northern Plains is protohistoric in age, in the Dakotas and Canada.

In the author's opinion the last conclusion seems to be the best. This should occasion no surprise, since peripheral extensions of culture complexes often supersede their abandonment in the country of origin by many years. A modern example of this phenomenon is the peyote cult, which has been on the decline in Mexico for more than 100 years, but is only now reaching certain Indian tribes in Canada and the eastern United States.

Obviously, much work is needed in this area on materials relating to the Southern cult-bearing culture. The author would particularly like to know if scratched drawings occur on the reverse sides of Southern cult gorgets found elsewhere, particularly in the Southeast.

BIBLIOGRAPHY

FORD, J. A. AND G. R. WILLEY

1941. An Interpretation of the Prehistory of the Eastern United States. *American Anthropologist*, Vol. 43, No. 3, pp. 325-63. Menasha.

HOLMES, WILLIAM H.

1883. Art in Shell of the Ancient Americans. *Annual Report, Bureau of American Ethnology*, No. 2, 1880-81, pp. 179-305. Washington.

KRIEGER, ALEX D.

1945. An Inquiry into Supposed Mexican Influences on a Prehistoric "Cult" in the Southern United States. *American Anthropologist*, Vol. 47, No. 4, pp. 483-515. Menasha.

MARTIN, PAUL S., GEORGE I. QUIMBY AND DONALD COLLIER

1947. *Indians Before Columbus*. University of Chicago Press.

MONTGOMERY, HENRY

1906. Remains of Prehistoric Man in the Dakotas. *American Anthropologist*, Vol. 8, No. 4, pp. 640-51. Menasha.

1908. Prehistoric Man in Manitoba and Saskatchewan. *American Anthropologist*, Vol. 10, No. 1, pp. 33-40. Menasha.

WARING, A. J., JR. AND PRESTON HOLDER

1945. A Prehistoric Ceremonial Complex in the Southeastern United States. *American Anthropologist*, Vol. 47, No. 1, pp. 1-34. Menasha.

North Dakota State Historical Museum
Bismarck, North Dakota
February, 1953

AN ARCHAEOLOGICAL RECONNAISSANCE IN SOUTH-CENTRAL QUEBEC, 1950

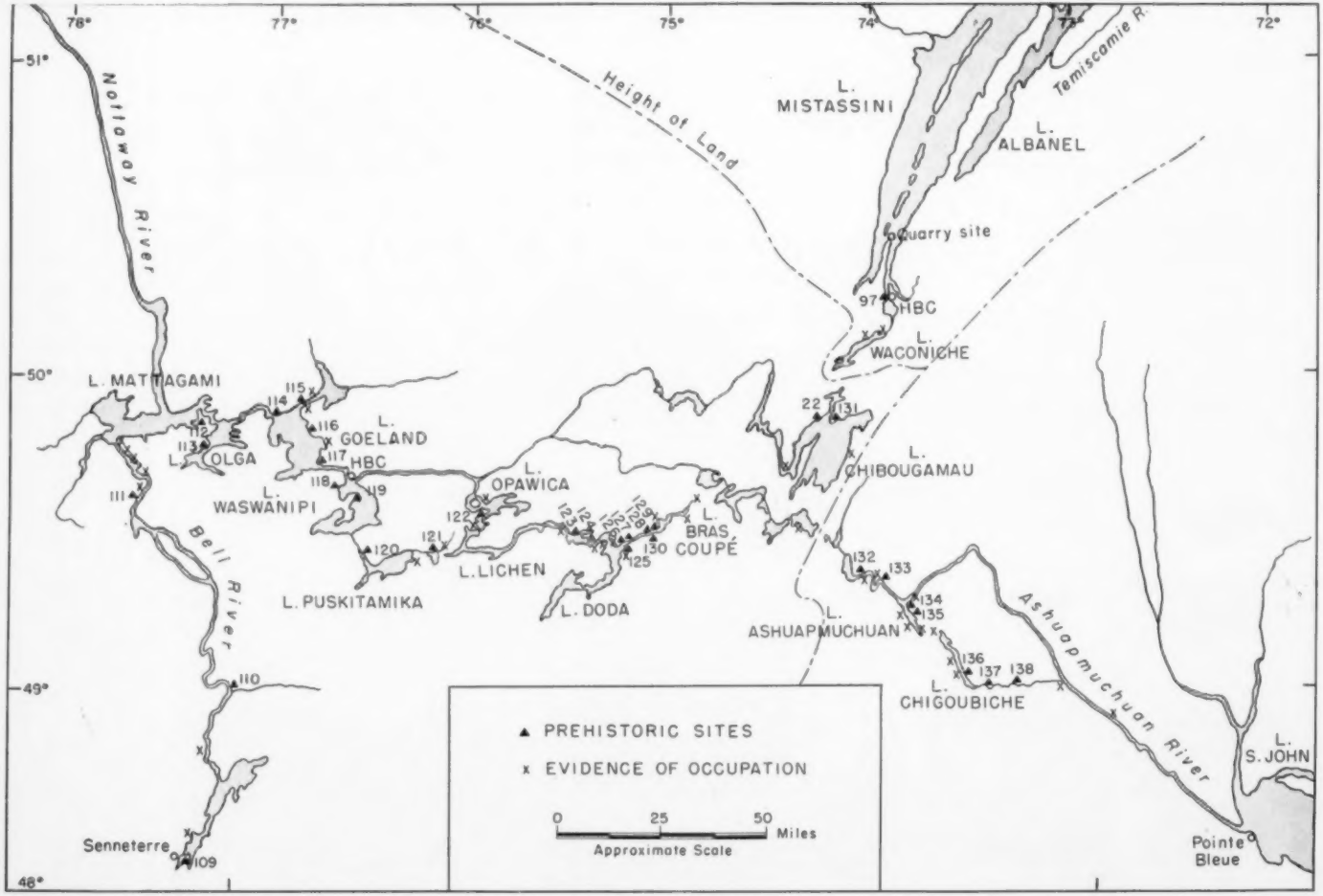
EDWARD S. ROGERS AND ROGER A. BRADLEY

DURING THE SUMMER of 1950, from June through August, the authors made an archaeological reconnaissance in south-central Quebec. All traveling was done by canoe.* This work was made possible by grants from the Robert S. Peabody Foundation for Archaeology, Andover, Massachusetts and from Stephen Phillips of Salem, Massachusetts.

The survey was started at Senneterre, Quebec (Fig. 54) and carried northward by way of Lac Parent and the Bell River to Lake Matagami. At this point, we began working upstream by way of the Waswanipi River to Lake Waswanipi, passing through Lakes Olga and Goeland. After spending a few days looking about Lake Waswanipi, we continued on our way to Lake Mistassini. The route took us through Lakes Puskitamika, Malouin, Lichen, and Opawica. We then ascended the Opawica River to Lakes Doda and Bras Coupé. From here, we crossed the height of land to Lac Presqu'ile and continued up the Obatogamau River to Lake Muscocho. Another height of land was then crossed to reach the Chibougamau River. Then passing through Lakes Doré, Chibougamau, and Waconichi, we arrived at the Hudson's Bay Company post on Lake Mistassini. Part way up the lake, a short side trip was made in the hope of locating a flint quarry that the Indians had mentioned in 1948.

After leaving Lake Mistassini, we retraced our steps as far as Lake Chibougamau where we crossed to Lake Obatogamau and thence by way of small lakes to the Ducharme River and Lake Ashuapmuchuan. Crossing a height of land, we reached Lac Chigoubiche and the Chigoubiche River. We followed this river downstream to its junction with the Ashuapmuchuan River, and then descended to Big Bear Falls, some 12 miles from where the river

* Canoe travel in south-central Quebec presents many difficulties. Without the cooperation and hospitality of the people living and working in the country, travel would be greatly restricted. We are sorry that lack of space prevents us from mentioning by name everyone that helped us. To Hal Hollingsworth and Mr. and Mrs. Ronald Thierry, we are deeply indebted for their help and thoughtfulness during our few days spent at Lake Waswanipi. Also, we wish to thank Emmett McLeod, Mr. and Mrs. George McLeod, and Mr. and Mrs. Wilfred Jeffreys, all of Lake Mistassini, for their generosity and hospitality. D. Eaton Cooter gave invaluable assistance in seeing that our equipment was taken care of and shipped home. We are sincerely grateful to Douglas S. Byers and Frederick Johnson of the Peabody Foundation for all the assistance they rendered us both before and after the trip. Both we and the Foundation wish to express our thanks to Stephen Phillips for his interest and generous help in making this trip a reality.


78°
77°
76°
75°
74°
73°
72°
51°
50°
49°
48°
Nottaway River
Height of Land
Temiscamie R.
L. MISTASSINI
L. ALBANEL
quarry site
97
HBC
L. WACONICHE
L. MATTAGAMI
L. OLGA
L. GOELAND
HBC
L. WASWANIPI
L. OPAWICA
L. BRAS COUPÉ
L. LICHEN
L. PUSKITAMIKA
L. DODA
L. CHIBOUGAMAU
L. ASHUAPMUCHUAN
L. CHIGOUBICHE
Ashuapmuchuan River
L. S. JOHN
Pointe Bleue
Bell River
Senneterre
109
110
111
112
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114
115
116
117
118
119
120
121
122
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130
131
132
133
134
135
136
137
138
▲ PREHISTORIC SITES
x EVIDENCE OF OCCUPATION
0 25 50 Miles
Approximate Scale

FIG. 54

TABLE 4

	L. Parent	Bell R.	L. Mattagami	L. Olga	L. Goeland	L. Waswanipi	L. Opawica	L. Doda, Bras Coupe	L. Chibougamau	L. Mistassini	L. Waconichi	Ducharme R.	L. Ashuapmuchuan	L. Chigoubiche	Chigoubiche R.	TOTALS
Side Scrapers		3								1		1				5
End Scrapers		6	1		6	5		7	3	5	1	1	2			37
Pointed Core Implements		1														1
Plano-convex Implements		1														1
Arrowpoints																
Lanceolate Side Notched		1			1			2				1				5
Stemmed						1										1
Flake					1											1
Lanceolate convex base		1			1			1	1							4
Flake "Anvil Chipped"										1						1
Large Blades	1															1
Blade Fragments		2			1		1	5	2	5		6	1		2	25
Flake Implements		1				1		2	1	2	1	3	2		1	14
Chipped and Battered Stones		3			2					1				1		7
Hammer								1								1
Hammerstones								3								3
Misc. Chipped Fragments					1		2	1	1							5
Gunflint													1			1
Beads				2												2
Adze				1												1
Rubbing Stone							1									1
Fragment of Polished Green Stone		1														1
Gouge						1										1
Iron Fish Spear					1											1
Potsherds		7			18			12					1	16		54
TOTALS	1	27	1	3	32	8	4	34	8	15	2	12	7	17	3	174

enters Lake St. John. Here, because of a pulpwood drive, we were forced to terminate the survey.

During the summer, we found 30 prehistoric sites and indications of nearly twice that many more. The new sites were given numbers which continue in sequence with those reported by Rogers and Rogers (1950). All of the sites, except 114 and 117, have been badly eroded by wave, current, and ice action; the former is, in part, rock defended and the latter, although disturbed by spring high water, is being built up in places by river deposition year after year. Sites are located on the shores of lakes and rivers of all sizes. One indication of a site, however, was found several hundred feet from water on a portage trail near the height of land between the Opawica and Chibougamau rivers. Usually the sites are of small extent, the material extending along the shore for from 10 to 50 feet. An exception is occasionally found where a site is located on a long sandy beach. Here, the material is sometimes scattered along the beach for 100 to 200 feet or even more. In every case, the bank at the rear of the beach is rather low, never being more than 4 feet high. At all sites except 130, where the land rises steeply from the bank, the land is level and occasionally low with a swampy appearance. Sites 109, 110, 111, and 112 are situated on clay; all the rest are situated on sand and gravel. Seventeen of the prehistoric sites are also the sites of camps used by modern Indians, either in the winter or when traveling through the country. One-half of the sites have a southerly exposure. The rest face the other three main compass directions in about equal numbers.

Rogers and Rogers (1950), offer a classification of types of artifacts outlined for the material collected in the vicinity of Lakes Mistassini and Albanel in Quebec. This classification, with several additions and subtractions, has been used in the analysis of the present collection. A complete list of artifacts found in 1950 is given in Table 4.

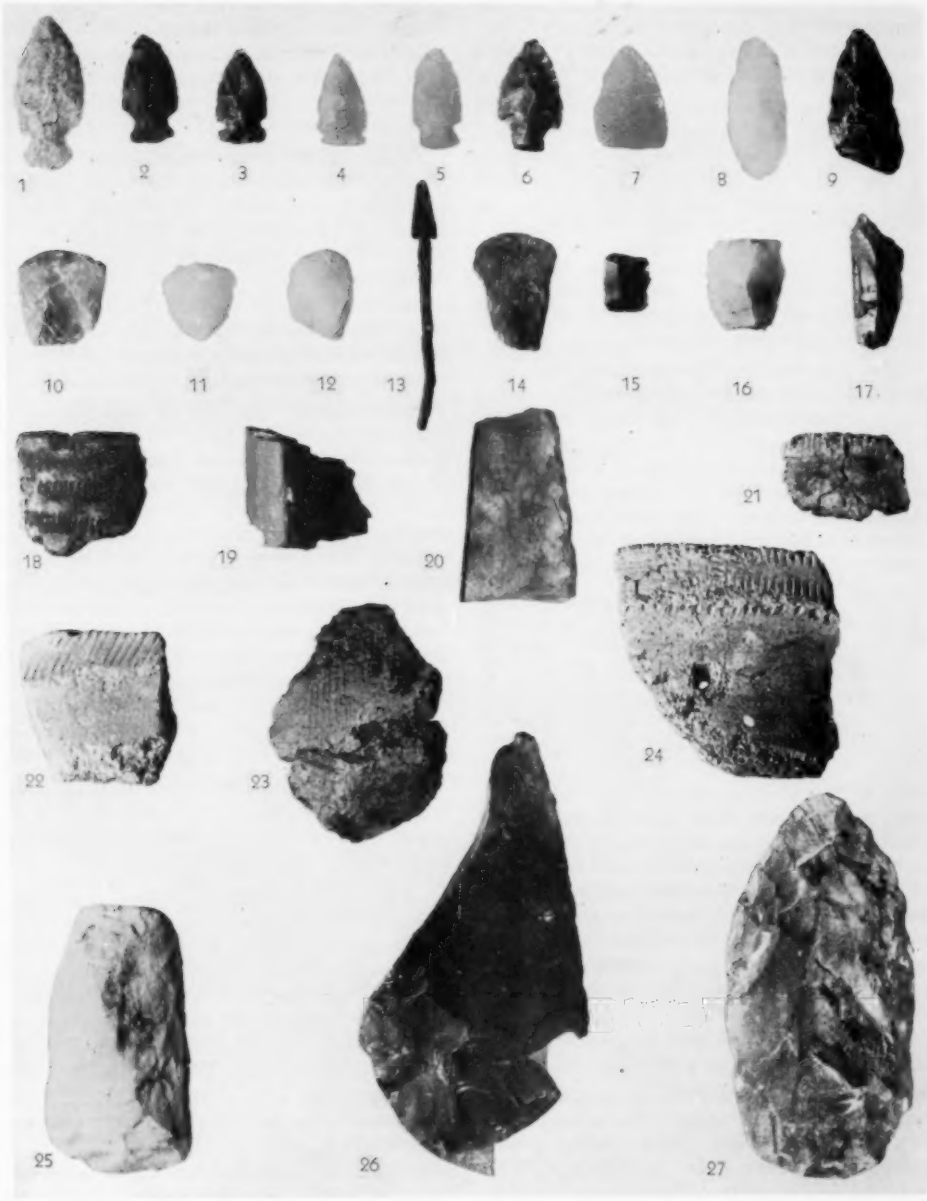

FIG. 55. Artifacts from sites in south-central Quebec. *1-5*, lanceolate side-notched; *6*, stemmed; *7*, flake arrowpoint; *8, 9*, lanceolate convex base; *10-12*, end scrapers; *13*, fish spear; *14*, fragment of polished greenstone; *15*, gin flint; *16*, side scraper; *17*, flake implement; *18, 21-24*, potsherds; *19*, fragment of gouge; *20*, rubbing stone; *25*, adze; *26*, fragment of large blade; *27*, pointed core implement.

Pointed Core Implements. One pointed core implement (Fig. 55, *27*) 15 cm. long, 7 cm. wide, and 3.5 cm. thick, was found. Sections of the edges show some utilization.

Plano-Convex Implements. There is one plano-convex implement, 9 cm. long, 4.5 cm. wide, and 3 cm. thick. The tool is made from a core which has been worked on both faces. One end is pointed, while the other shows evidence of a striking platform.

Flake "Anvil Chipped." One large chip shows "anvil" chipping along one edge. The other edge, which is concave, shows either purposeful chipping or utilization.

Flake Implements. No classification has been made for these flake implements (Fig. 55, *17*) because they are of all shapes and sizes. Both concave and convex edges have been used. The chipped edges may be the result of either utilization or purposeful retouching. One large flake of slate has one edge worn down through use. It has not been further modified by chipping.

Scrapers. The scrapers are made from chips of almost any shape and size. There are five side scrapers (Fig. 55, *16*) which have been retouched along one convex edge. In one case, the opposite concave edge has been retouched, while in another case, an end has been retouched. There are 37 end scrapers (*10-12*) ranging in size from 1.7 cm. long and 1.9 cm. wide to large scrapers 4.5 cm. long and 4.5 cm. wide and 1.0 cm. thick. On the majority, a "vertical" retouch has been applied to one end in order to produce a convex edge. One recognizable shape is present—trianguloid. This shape has been produced by extending the retouching down both sides of the scraper. In two cases, a retouch has been applied to the opposite face. Three scrapers show a median ridge similar to that observed on the scrapers termed "long, narrow end scrapers" in 1948. In the present case, however, the median ridge is accidental.

Arrowpoints. There are five side-notched, lanceolate arrowpoints (*1-5*) ranging in size from 3.6 cm. long and 2.0 cm. wide to 6.0 cm. long and 2.7 cm. wide. Three nearly complete arrowpoints are lanceolate with convex bases (*8, 9*). The sizes range from 6.0 cm. long and 3.0 cm. wide to an estimated 4.5 cm. long and 2.5 cm. wide. One jasper arrowpoint, 4.5 cm. long and 2.5 cm. wide (*6*) is stemmed. It was given to the authors by the chief of the Waswanipi Band. He said that his son had found it on a sandy beach on Lake Puskitamika. One arrowpoint has been made from a flake of quartzite (*7*). The specimen is 4.0 cm. long and 3.0 cm. wide.

Blades. There is one large blade (*26*). It is, unfortunately, broken, but what remains measures 17.3 cm. long, 8.8 cm. wide, and 1.0 cm. thick. The blade has been made by the removal of large chips by percussion. The one remaining edge has a number of chips taken off either by use or by light percussion chipping. One of the broken edges shows evidence of utilization, perhaps as a scraper. A number of broken blades were found.

Hammerstones. Very few hammerstones were seen, but three were brought back because of their unusually large size. One is nearly round with a diameter of 12 cm. and a thickness of 6 cm. The edges show battering. The points at which the thumb and finger would grip the stone for hammering have been pecked or perhaps battered through use as an anvil. The other two hammerstones are oblong in shape and measure between 11 and 12 cm. in length. One end has been battered in such a way as to produce a flattened surface. In a very general way, these last two hammerstones resemble the stone pestles reported by Turner from Ungava (1894, p. 302).

Hammer. In this class has been placed one large piece of diorite with a groove about its center. This groove may have been produced by pecking.

Chipped and Battered Stones. There are several pieces of quartz which show battering and chipping over their surfaces. There is, also, a core of chert which shows some chipping and has been slightly water-rolled. One rather large piece of greenstone has been crudely chipped along its edges on both faces. A piece of what appears to be mudstone has been chipped along the edges of one face.

Polished Stone Artifacts. Only four polished stone artifacts were found. A small piece of greenstone has been polished for a short distance back from the one remaining edge on both faces (*14*). The edge has been dulled through use. One very small fragment of a red slate gouge was found (*19*). The groove has been produced by pecking, and the sides and bottom have been finished by polishing.

One rubbing stone (*20*) was found; this was made from a piece of slate-like stone. One face has a very shallow groove, that has been highly polished through use. One edge has been crudely chipped. A small chipped adze was found (*25*); it measures 10.5 cm. long, and 5.0 cm. wide. The bit shows polishing, probably through use. The butt has a flat and rather smooth surface, which may be the result of utilization in some manner. Near the bit end, on the flat side, there is an area which appears to have been rubbed quite smooth, perhaps through the effect of hafting.

Trade Goods. During the summer, one gun flint (*15*), two very small blue trade beads, and one iron fish spear (*13*), were found. The fish spear measures 10 cm. in length, the blade taking up 2.3 cm. of the total length.

Pottery. During the course of the survey, about 50 pieces of pottery were found on 10 sites. Of these 50 sherds, 12 show some form of decoration. The pottery illustrated in Figure 55, *22* and *24* came from sites *111* and *124* respectively; that in Figure 55, *21* and *23* came from site 136. The four pieces are decorated with incised lines, placed horizontally, vertically, or diagonally, and arranged in various combinations. On the outside surface, the color tends to be buff or light pinkish tan, but within the pottery itself, the color is in general blackish. The tempering ranges from fine to coarse particles and from small to medium amounts. Predominantly, the tempering is quartz particles, which may have been produced by crushing or may be natural beach sand.

The pottery illustrated in *18* came from site 114, test pit 2. This pottery exhibits cord markings, deeply impressed. The color is a dark brownish to black throughout. There is a medium amount of tempering, which is rather coarse. In the same test pit, three small body sherds were found which are decorated with small serpentine incised lines parallel to each other. This design is reminiscent of St. Lawrence Pseudo Scallop Shell of Ritchie and MacNeish (1949, p. 103).

Test Pits. At a few of the sites located during the summer, test pits were dug in the hope of establishing occupation levels. On site 114, test pit 2, located about 5 feet back from the bank, revealed an occupation layer about 1½ inches thick resting directly upon glacial till. The layer contained chips, one lanceolate side-notched arrowpoint, an end scraper, pottery, and charcoal. Directly on top of the occupation layer was a 2-inch layer of turf. Grass roots from the turf extended into the occupation stratum below.

Test pit 3 was dug about 42 feet southeast of test pit 2 and 2 feet back from the bank. Here, a slightly different profile existed. A 2-inch layer of turf rested upon an occupation layer 2½ inches thick, which contained chips and charcoal. This first occupation layer was separated from a second by a 1- to 2½-inch layer of sterile sand. The second occupation layer, 2 to 4 inches thick, contained one end scraper, one pot sherd, chips, and charcoal. This last layer rested upon glacial till. The sterile sand began to pinch out a short distance back from the bank. The sand may be a flood deposit.

At site 117, a test pit produced chips, two trade beads, and a fish spear (*13*), as well as modern rifle cartridges in apparent confusion. The top layer, 1 inch thick, consisted of recent debris deposited by high water. Below this there was a thoroughly mixed layer of sand, charcoal, and chips. Two other test pits revealed evidence of occupation. One of these was located on the portage between Lac Bras Coupé and the Obatogamou River; the other was located on Lake Obatogamou. In both cases, a few chips were found directly beneath the duff, resting upon a white sandy-clay layer.

Quarry Site. The quarry site is located about 20 miles north of the Hudson's Bay Company's post on Lake Mistassini. There were indications that material had been chipped from the exposed surfaces of narrow veins of greyish-black quartzite that occur within the dolomitic bedrock. No definite artifacts were found in the immediate vicinity. At site 97, however, several chips of this same greyish-black quartzite were found. It is impossible to say whether the pieces from which these chips were struck came from the quarry site.

Discussion. For several reasons, a discussion of the collection must be restricted. The number of artifacts collected is small, and the sites are scattered over an extensive territory. Furthermore, nearly all of the artifacts are surface finds.

The survey was conducted for the purpose of exploring archaeologically a hitherto unexamined portion of south-central Quebec. Also, it was hoped that the geographical range of

the material from the area of lakes Mistassini and Albanel might be extended.

The finding of pottery in this section of south-central Quebec extends its distribution as delimited by Wintemberg (1942, Fig. 7 opposite p. 133). Little can be said regarding the pottery except that the incised ware is Iroquoian-like, and the cord impressed could be Woodland. The presence of pottery and trade goods seems to indicate a relatively recent date for at least some of the sites.

The pottery and the almost total lack of heavy core tools sets this material apart from that found in the vicinity of lakes Mistassini and Albanel. This distinction suggests that there is a lack of continuity between the materials of the Mistassini-Albanel area and the area surveyed during 1950. Whether this is due to a time element or to the cultural backgrounds of the peoples who made the artifacts is, at present, unknown.

BIBLIOGRAPHY

RITCHIE, WILLIAM A. and RICHARD S. MACNEISH

1949. The Pre-Iroquoian Pottery of New York State. *American Antiquity*, Vol. 15, No. 2, pp. 97-124. Salt Lake City.

ROGERS, EDWARD S. and MURRAY H.

1950. Archaeological Investigations in the Region About Lakes Mistassini and Albanel, Province of Quebec, 1948. *American Antiquity*, Vol. 15, No. 4, pp. 322-37. Salt Lake City.

TURNER, LUCIEN M.

1894. Ethnology of the Ungava District, Hudson Bay Territory. *Annual Report, Bureau of American Ethnology*, No. 11 (1889-90), pp. 159-350. Washington.

WINTEMBERG, W. J.

1942. The Geographical Distribution of Aboriginal Pottery in Canada. *American Antiquity*, Vol. 8, No. 2, pp. 129-41. Menasha.

Middlebury, Vermont
Hanover, New Hampshire
March, 1953

SOME UNUSUAL CERAMICS FROM ESMERALDAS, ECUADOR*

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IN 1940, while on a commission for the Ecuadorian Government to the site of La Tolita in the province of Esmeraldas, Ecuador, the author had an opportunity to examine and photograph a few specimens in the collection of Sr. Yannuzzelli. Sr. Yannuzzelli maintained a ranch at the archaeological site of La Tolita which is located a few miles up the Rio Santiago from the coastal town of Limones and is not far from the Colombian border. Several large flat top mounds (Fig. 56, *1*) and about 25 increasingly smaller ones comprise the present site. It had been visited about 30 years previously by both Uhle and Saville, but neither one conducted adequate excavations there. It is a favorite site for local inhabitants to pan gold, and in 1940, Sr. Yannuzzelli was actually engaged in carrying out extensive, large scale, placer mining operations within the archaeological zone. These operations, naturally, were rapidly destroying a great wealth of material, since Sr. Yannuzzelli was interested primarily in the gold ornaments and gold dust he recovered, and practically not at all in the pottery vessels, figurines, stone tools, and other objects being uncovered and broken by his workmen. The vessels described below are only a few of the items which Sr. Yannuzzelli possessed and which, despite the placer operations, had managed to survive without injury and were, therefore, saved by him. Many broken or slightly damaged pieces had been casually thrown away and lay scattered over the diggings. A few months later, Sr. Yannuzzelli's ranch burned down, and presumably his entire collection, including these pieces, was destroyed with it.

One of the more interesting of the pottery forms shown here is the torso of a pregnant female (Fig. 56, *2*). It is 7 inches in length over-all; 4.1 inches wide. The torso is partially naked, displaying the breasts and markedly protuberant navel. A sharply cut garment, in the form of a very short surplice, with geometrically incised lines indicating decoration, and a similarly designed skirt, rolled at the waist, complete the figurine. An orange-reddish pottery slip covers the entire figure. The lack of arms, head and legs, however, is not due to accidental breakage, for the figurine is so constructed, and the joint and neck holes so socketed, that movable limbs and head could have been added. That such was done is not known positively, for unfortunately, the head and limb pieces were missing.

Figure 56, *8* shows a wide-flanged, divergent double spouted and strap-handled vessel. The strap handle is broken off short, close to each spout, but its original nature is clearly evident. The paste was originally fine-grained grey, but the upper portion (down to within 0.5 inch below the flange) is covered with an orange slip which in turn has been lightly painted red and highly polished. The vessel is 5.5 inches high (including spouts); 3.6 inches to the top of the rounded upper portion. The tapering spouts, which are slightly chipped at the ends, are 2.5 inches long and 1.3 inches wide at the base, narrowing to 0.4 inch at the ends. From the base of the vessel to the flange is 1.3 inches, while the flange itself is 0.2 inch wide.

A third rather unique specimen is the *compotera*, or open bowl on an annular base, illustrated in Figure 56, *4*. At one time this vessel had an orange color overlain by a reddish slip, which had become eroded and was replaced by a kind of whitish mold. The wide annular base still shows the basic orange slip, over which six red stripes had been painted running from the base of the stem down to the edge of the flange on the outer part of the annular base. The vessel is 7.6 inches high, with the base 1.9 inches high and 6.8 inches in diameter; the stem is 2.6 inches long and the bowl is 2.8 inches deep and 7.2 inches in diameter. The bird-wing-like appendages on the bowl, of which there were four, are located approximately 1.2 inches below the rim; each is hollow and contains a small circular opening in the flatter, upper surface. On one side of the stem is a protruding head and neck of a bird, while on the opposing side is a flange representative of a bird's tail. In between, on the third and fourth sides each, are curved, semilunar flanges, probably representative of wings. The stem of the vessel is hollow and speckled

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FIG. 56. *1.* One of the flat-topped mounds at the site of La Tolita, Esmeraldas, Ecuador; *2-9,* pottery figurines and vessels from the same site.

with numerous small circular openings similar to the one in each of the bird-wing appendages on the bowl.

Figure 56, 6 shows a shallow mammiform tripod. The paint has faded badly. At one time the outside had an over-all orange-yellow slip. The inside of the bowl was decorated in a greyish-white slip with a negative painted dark-grey or black cross design in the center. On the outside, where the mammiform legs join the bowl, there is an 0.7 inch wide red band completely encircling each leg. The red circle design is repeated again around, and completely over, the nodule on each leg. The vessel is only 2.5 inches in height from the bottom of the bowl to the rim; 7.3 inches in diameter; and about 2.0 inches in depth. The mammiform feet are each 3.0 inches in height and approximately 2.3 inches in diameter. The nodules on each foot extend outward 0.5 inch.

One animalistic form is shown in Figure 56, 5. It possibly represents a jaguar head. The head has been broken at the neck, and the original red-orange slip is now very faded. The animal is depicted as snarling in a very realistic manner. The figure measures 5.0 inches in height from the dome of the head to the neck; 5.5 inches long from the front to the back of the head, and is 4.1 inches wide across the face. The mouth opening between the fangs is exactly 1.0 inch.

The other life form represents a combination animal-fish, Figure 56, 3. A wide ruff around the neck is incised with carefully spaced lines. The nose is square and pug, the eyes rather "popped," and the teeth, which are pointed and sharp, are indicated by a deeply incised zig-zag line. A rectangular roll of clay has been used to indicate the mouth drawn back almost in a snarling fashion. The fish body is short and stocky, with pectoral and dorsal fins indicated by flat slabs. A short stubby caudal fin, or tail, completes the body. The clay is rough, with an over-all orange slip. It is 6.0 inches long from the tip of the nose to the tail, and 3.3 inches in height; 4.0 inches in width. The ruff around the neck is 0.7 inch wide. The dorsal fin is 1.0 inch high; the pectoral fins extend outward 0.6 inch. The mouth is 0.5 inch wide, and the caudal fin is 0.9 inch broad.

Photographs of this specimen were shown to Leonard P. Schultz, Curator of Fishes, United States National Museum, who stated that it did not resemble any known fish, but that the head might represent a South American peccary. The peccary, or wild boar, is found commonly in the jungle country of South America, and has a ruff or fringe of hairs around its neck which tend to stand up when the animal is frightened or angry. It cannot be categorically stated, of course, that this figure is partially a peccary, but the snub nose, undershot jaw, snarling mouth, sharp teeth, and obvious ruff around the neck might well lead to that supposition. The concept of combining different parts of various life forms into one figure is an idea frequently represented in many art forms in both Central and South America.

Most of Sr. Yannuzzelli's collection of pottery specimens — salvaged despite his placer operations—unfortunately could not be photographed or measured and described. One other item, however, of which photographs could not be taken, is described below from my field notes. It was a seated human male figure, about 10 inches high, with legs spread somewhat apart and hands placed on knees. The figure was seated on an obvious representation of a typical Manabi-type seat and was completely naked and unpainted except that in the lobe of each ear there was a circular plug which was painted a brilliant gold color. The lobe of the ear was represented as being distended downward by the weight of the golden ear plug.

Outside the *hacienda*, cast up against a fence with some modern rubbish, were two large pottery vessels, Figure 56, 7 and 9. The first of these (7) shows a large vessel, which has been turned and photographed upside down in order that the opening in the bottom might show more clearly. Being 1.0 foot, 10.5 inches high, this bottomless large vase has a flanged rim, constricted shoulders, and a body sloping inward to the open bottom. The top, including flange, is 18 inches in diameter, the narrowest portion, just above the shoulders is 14 inches, and from the shoulder to the bottom is 16 inches. The diameter of the bottom opening is 9 inches. The walls of the vessel were made of a thick (0.75 inch) greyish clay, and the vessel was without slip, paint, or other decoration.

The second vessel (9) was a square box-like structure composed of the same thick, gray paste as the first globular bottomless jar. The square box, however, had walls a good inch thick and a substantial bottom. Absolute dimensions on this object are currently missing from my field notes, but it was approximately

the same height as the first vessel. On either side of each corner there was a small hole located approximately 1.5 inches below the rim. Enough of the original slip remained to indicate that it once had been orange-yellow in color.

The *enceinte* female torso (*2*) is not unique, by any means, in expressing the idea of fecundity. That idea is an almost universal expression among Indian groups. What is outstanding, however, is the excellent and sophisticated modeling, the use of socketed joints for possible movable limbs and head, and the careful delineation of both the breast-length surplice and the waist-rolled skirt. Another example of a breast-length surplice is given in d'Harcourt, as well as two figurines showing a skirt with geometric decoration indicated by incised lines (d'Harcourt 1947, Pl. XVI, Fig. 3; Pl. XIX, Figs. 2 and 4). Figurines with movable arms and legs (but not socketed joints) are reported from the Toltec period at the site of San Juan Teotiahuacan in the Valley of Mexico (Spinden 1928, p. 178). A few examples with possibly movable heads are reported from Tres Zapotes, Vera Cruz (Drucker 1943, p. 85). If this combination of ideas, as expressed here, is foreign to Costal Ecuador, its exact source is unknown; if local, it shows a high degree of potter's skill and a fine sense of modeling reminiscent of (but not necessarily related to) the sophistication in Mochica ceramic art.

The flanged, divergent, double-spouted, and strap-handled vessel (*8*) is unique, so far as presently known, in possessing a flange around the middle of the lower two-thirds of the vessel. The tapering divergent double spouts and strap handle, however, are characteristic of Peruvian pottery where they occur in many late coastal cultures.

It would seem that until the Coastal Tiahuanaco period, the double spout and strap is unknown on the Central Coast, rare on the North Coast (except for a type in which one of the spouts is a figure), but common on the South Coast. Jijón y Camaaño has studied the matter at length and states:

> From the time in which the Tiahuanaco style was disseminated from southern Ecuador to N. W. Argentina, the bitubular vase spread throughout the Peruvian coast, but the spouts become more separated than in preceding periods. (Jijón y Camaaño 1949, p. 347)

Except for one very curious aberrant vessel reported by Rowe from Piura (Rowe 1942), the divergent double-spouted and strap-handled vessel was at least extremely rare, if not completely non-existent, north of the Nazca area prior to the Tiahuanaco period. Subsequent to that time, its spread seems to have been very rapid and presumably it would have arrived in Ecuador during, or shortly after, the spread of any Tiahuanaco influences.

Divergent, double spouts with strap handles are known as far north as the Quimbaya region of Colombia during the Middle Period, where they are found with other characteristics often referred to as Peruvian (Bennett 1944, pp. 75-76). The example figured here, however, is more like specimens from northern Peru than it is similar to those shown by Bennett as being characteristic of the Quimbaya (Bennett 1944, p. 62, Fig. 13 b and c).

The *compotera* form of vessel is characteristic of the Ecuadorian highlands, especially in the province of Chimborazo (Jijón y Camaaño 1921-24) as well as the Veraguas and Arenas regions of Panama (Lothrop 1950). The specimen represented here is far more elaborate than usual, though Jijón y Camaaño illustrates a *compotera* from Urcuqui in which the stem consists of a four-legged animal modeled in the round and standing on a short sloping base (Jijón y Camaaño 1914, Pl. XXI). A definite stem, the use of bird-effigy wings on the sides of the bowl, and a bird effigy on the stem itself seem to denote a number of influences, possibly combined together here in a rather unique fashion. The bird effigy is reminiscent of material from Cocle and Veraguas (Lothrop 1937, 1950). Open bowls, on tall expanding bases, are known from Costa Rica as far south as the Recuay area of Peru (Lothrop 1926, Vol. 2, p. 407).

Squat bowls with broad bases first appear in the Ecuadorian highlands in Jijón y Camaaño's Proto-Panzuelo II period. Shallower, more open bowls with taller sloping bases appear in the subsequent period, Tuncahuan (Jijón y Camaaño 1921-24). These periods are probably not as early as Jijón y Camaaño indicates for according to Collier and Murra, "Tuncahuan ceramics are a part of the latest outside wave to penetrate the Canar area, shortly before the Incaic conquest" (Collier and Murra 1943, p. 88). It is not known whether the *compotera* form is earlier on the coast or in the highlands, nor whether it is basically Central American or South American in origin. In either case, it

seems to be a relatively late form probably derived from an earlier type of bowl with a short squat base. For the specimen illustrated here, it appears probable that the more Central American idea of using *adornos*, or small attached figures, has been applied to a possible Ecuadorian form—the *compotera*—in a manner not normally used in either area.

Likewise the shallow, mammiform tripod (Fig. 56, 6) shows a combination of several influences. Tripod vessels of themselves are not uncommon in Ecuador, but one which possesses such bulbous mammiform legs, even including a highly protuberant and realistically painted "nipple," can be considered almost unique. More commonly, the tripod legs, even when mammiform, are pear-shaped rather than bulbous. The closest similarities to the specimen here shown seem to lie in certain vessels from Holmul I times in the Peten district of Guatemala (Merwin and Vaillant 1932, pl. 18, Figs. c, d, and e). A similar type, obviously closely related to that of Holmul I, is recorded for the site of Nohmul, British Honduras, where it may be later in time than the Holmul I examples (Gann and Gann 1939, p. 50; Pl. 10, Fig. 4). Mammiform feet somewhat similar to these are also noted in the Nandaime wares of Costa Rica-Nicaragua (Strong 1948, Fig. 19). Tripod bowls, with rather flat-bottomed mammiform legs containing slits appear in the Tepeu Phase (A.D. 633—A.D. 987) at Uaxactun (Longyear 1942, p. 391; 394-5 and Fig. 46r). In the cases just cited for the Peten, British Honduras and Costa Rica, however, the mammiform feet are turned downward so that the vessel actually rests upon the nodule of the leg, and there are also open slits in each side of the bulbous part of the leg. In the specimen described here, however, there are no slits, and the nodule extends sideward so that the vessel rests upon the bulbous portion of the leg.

The addition of a negative painted design on the interior of the bowl could be taken as a part of the more general adoption by Ecuadorian potters of a decorative technique which, without doubt, originally stemmed from further south in Peru. If the Paracas-Cavernas period of the south Peruvian coast, where negative painting first appears, is considered as linked to the Coastal Chavin, even though that may be a late link, then a slow spread from south to north of negative painting technique can be postulated. Negative painting appears on the Central Coast late in the White-on-Red period, and on the North Coast in the Gallinazo (post White-on-Red) period (Willey 1948, p. 11). Pending establishment of a South Coast chronology, however, and if our view here is correct, negative painting would arrive in Ecuador not early, but still prior to a generalized spread of Tiahuanaco traits.

The specimen illustrated here would, therefore, seem to be an early Central American vessel form with an interior design derived from southern Peru—both influences arriving in Ecuador prior to any Tiahuanaco influences.

The two life forms, the jaguar (5) and the peccary-fish (3) are very difficult to place in any definite context. The jaguar motif is basic to much of the Andean and coastal South American areas (appearing early in the ceramics of the Peruvian coast and in stone carvings of the highlands), as well as basic to many of the Meso-American cultures. Most likely, the figure represented here from Coastal Ecuador is a local manifestation of this more widely spread basic religious belief.

The peccary-fish most closely resembles, in concept, certain frog-fish effigies of metal from the Veraguas area of northern Panama. Two types of metal fish pendants are known from that region. One type is relatively simple and obviously represents a complete fish—possibly a shark. The other type is a fish body with a frog's head, "eyes looking upward and with mouth projection typically seen with frogs" (Lothrop 1950, p. 66).

The seated human figure, described above, but not illustrated, is not unique in concept for Coastal Ecuador or even other tropical areas. D'Harcourt illustrates several seated figures from Esmeraldas (d'Harcourt 1947, Pl. XX, Figs. 1, 2, 5, 6, 7 and Pl. XXII, Figs. 1 and 3). Max Uhle illustrates an almost exactly similar figure from Esmaraldas (Uhle 1923, Pl. I) and a much cruder one from a tomb in Carchi (Uhle 1933, Pl. 3). Saville shows one which is standing on a seat that came from the Cape Pasado area of Manabi (Saville 1910, Vol. II, Pl. CIV). The specimen described above, however, had been exceptionally well modeled, and great care had been taken, by the use of the only paint on the figure at all, to indicate that the earplugs were of gold. Gold ornaments of many sorts being one of the more noted characteristics of La Tolita lends support to a belief that this figurine might have been a local product.

The two large pottery vessels shown in 7 and 9 are noteworthy for their size and lack of decorative features. Their exact function is unknown, though the holes just below the rim and near the corners of the square box would indicate that it had been made for suspension —possibly for the keeping of grain or other food above the damp soil and out of reach of animals and small rodents. What function the bottomless large vase may have had is most difficult to say. That it could have served as a chimney is not impossible. It may have been one of the vessels used in a multiple-urn burial. Or, connected to other similar tubular vessels, it could have served as a shaft of a well, or an underground drain.

All of the specimens described above were composed of a greyish paste, sometimes (in the larger specimens) rather coarse-grained. Except for the seated figure and the globular large vessel, all had an orange-yellow or orange-red slip. One form — the divergent double-spouted and strap-handled vessel — had red paint over the slip and was highly polished. It would seem logical, therefore, to assume that all of these pieces were manufactured locally, even at the site of La Tolita, and were all produced during the same general period. Certain secondary characteristics can be isolated as being more typical of areas outside Ecuador:

1) The divergent, double spout and strap handle is characteristic of Peruvian ceramics, especially Chimu, and is generally post-Tiahuanaco.

2) Negative painting originated in southern Peru, being early in Nazca and Paracas-Cavernas ceramics, and spread northward, arriving in Ecuador in pre-Tiahuanaco times.

3) Mammiform feet are early in the Peten and seem to have spread southward slowly—arriving in Ecuador at a period as yet undetermined, but, again, most likely slightly pre-Tiahuanaco.

4) Figurines with movable parts *may be* an early, east coast Mexican trait which spread slowly both westward and southward, but which was never very widely adopted. The example here seems to be too complex and sophisticated to have originated completely in this form just this one time. So far, earlier or cruder examples from this same area are lacking.

In recent years more archaeological work has been done in South America, especially Coastal Peru. Several attempts have been made to correlate cultural horizons from west coast South America with those further to the north (Strong 1943), and coastal Peruvian cultures to those in adjacent areas (Bennett 1948; Strong and Evans 1952). Radiocarbon dates now indicate a respectable antiquity for the early pottery bearing levels of Peru Coastal Chavin horizon (Arnold and Libby 1951, p. 119; Kulp, 1951, p. 566; Kulp et al. 1952, p. 410). Unfortunately, little yet is known in a definite way of archaeological sequences and culture horizons in Coastal Ecuador, and culture traits of seeming outside origin are difficult to place temporally. The so-called Chavin similarities in Ecuador as cited by Tello are too nebulous in context and subjective in interpretation to serve as adequate time markers (Tello 1943). Jijón y Camaaño's seven period sequence for the highlands of Ecuador (Jijón y Camaaño 1921-24) has been shown by Collier and Murra to be highly improbable on the basis that many of the pottery styles which Jijón y Camaaño used for period markers are actually found together over a short span of time (Collier and Murra 1943, p. 84). Recently Bushnell, in publishing on his excavations in the area of the Santa Elena Peninsula, postulates four culture periods for that area (Bushnell 1951, p. 10). These four periods, however, are not based on stratigraphic analysis of material but on stylistic similarities, and their validity as adequate time markers is open to question (Corbett 1953). Inca influences seem to have been confined largely to the highlands of Ecuador.

Thus, lack of adequate chronologies for Ecuador make it difficult to correlate Ecuadorian traits to the more definite Peruvian periods that fall between the Coastal Chavin and Inca horizons. This difficulty, as Collier has pointed out, may be due to a basic difference in cultural orientation coupled with the fact that excessive distances between the northernmost Peruvian coastal valleys made communication and trade by a land route almost impossible (Collier 1948, p. 85).

Or it may be that trade and commerce were carried on by sea between the Ecuadorian coast and the western seaboard of Central America in prehispanic times. Lothrop has stated that the "people of Panama are known to have traded by sea as far south as Ecuador" (Lothrop 1942, p. 258), and further that certain gold ornaments found at the Sitio Conte site in Panama, are actual importations from Esmeraldas (Lothrop 1937, p. 204). Even as early as the Mochica period in Peru, there are

ceramic representations of boats (possibly balsa wood) carrying anywhere from one to five people. These would have been suitable for coastwise sailing and may well have been used for trading purposes from valley to valley. Also this type of boat could have been used to bypass the northern section of Peru where the extensive deserts between valleys would make foot travel almost impossible. Small ornaments, of course, are more readily transportable than bulkier pottery, but if an extensive and continuous commerce were being carried on for a period of time, numerous ideas may well have been transferred which later were expressed within the limitation of, and through the media available to, the culture receiving these ideas.

BIBLIOGRAPHY

Explanation of Abbreviations Used:

AAnt	*American Antiquity*. Menasha.
ANH-B	*Academia Nacional de Historia*, Boletin. Quito.
BAE-B	*Bureau of American Ethnology, Bulletin*. Washington.
CSAE	*Columbia Studies in Archeology and Ethnology*. New York.
FMNH-AS	*Field Museum of Natural History, Anthropological Series*. Chicago.
PM-M	*Peabody Museum of Archeology and Ethnology, Memoirs*. Cambridge.
SAA-M	*Society for American Archaeology, Memoirs*. Menasha, Wisconsin.
SI-MC	*Smithsonian Institution — Miscellaneous Collections*. Washington.
SAP-J	*Societe des Americanistes de Paris, Journal*. New Series, Paris.
YUPA	*Yale University Publications in Anthropology*. New Haven.

ARNOLD, J. R. and W. F. LIBBY

1951. Radiocarbon Dates. *Science*, Vol. 113, No. 2927. February 2, 1951. Washington, D.C.

BENNETT, WENDELL C.

1944. Archeological Regions of Columbia: A Ceramic Survey. *YUPA*, No. 30.

1948 (Editor). A Reappraisal of Peruvian Archaeology. *SAA-M*, No. 4.

BUSHNELL, G. H. S.

1951. The Archaeology of the Santa Elena Peninsula in Southwest Ecuador, Cambridge University Museum of Archaeology and Ethnology, Occasional Publications, No. 1.

COLLIER, DONALD

1948. Peruvian Stylistic Influences in Ecuador. In A Reappraisal of Peruvian Archaeology. *SAA-M*, No. 4.

COLLIER, DONALD and JOHN V. MURRA

1943. Survey and Excavations in Southern Ecuador. *FMNH-AS*, Vol. 35.

CORBETT, JOHN M.

1953. *Review of Bushnell* "The Archaeology of the Santa Elena Peninsula in South-West Ecuador." *American Journal of Archaeology*. Vol. 57, No. 2.

DRUCKER, PHILIP

1943. Ceramic Sequences at Tres Zapotes, Vera Cruz, Mexico, *BAE-B*, No. 140.

GANN, THOMAS and MARY GANN

1939. Archaeological Investigations in the Corozal District of British Honduras. *BAE-B*, No. 123, Anthropological Paper No. 7.

D'HARCOURT, RAOUL

1947. Archeologie de la Province d'Esmeraldas (Equateur). *SAP-J*, Vol. 34, pp. 61-200.

JIJÓN Y CAMAAÑO, J.

1914. Contribucion al conocimiento de Los Aborigenes de la Provincia de Imbabura. *Estudios de Prehistoria Americana* II. Madrid.

1921-24. Puruha. *ANH-B*, Vol. 2, pp. 1-60; Vol. 5, pp. 205-92; Vol. 6, pp. 32-67; Vol. 7, pp. 185-93; 285-91; Vol. 9, pp. 268-406.

1949. Maranga. *La Prensa Catolica*. Quito, Ecuador.

KULP, LAWRENCE J.

1951. Lamont Natural Radiocarbon Measurements. *Science*, Vol. 114, No. 2970, Nov. 30, 1951. Washington, D.C.

KULP, LAWRENCE J., ET AL

1952. Lamont Natural Radiocarbon Measurements II. *Science*, Vol. 116, No. 3016, Oct. 17, 1952. Washington, D.C.

LONGYEAR, JOHN M. III

1942. A Southern Maya-Peten Pottery Correlation. *AAnt*, Vol. 7, No. 4.

LOTHROP, SAMUEL K.

1926. Pottery of Costa Rica and Nicaragua. 2 Vols. *Museum of American Indian, Heye Foundation*. New York City.

1937. Cocle, Part I. *PM-M*, Vol. 7.

1942. Cocle, Part II. *PM-M*, Vol. 8.

1950. Archaeology of Southern Veraguas, Panama. *PM-M*, Vol. 9, No. 3.

MERWIN, RAYMOND M. and GEORGE C. VAILLANT
1932. The Ruins of Holmul, Quatemala. *PM-M*, Vol. 3, No. 2. Cambridge, Massachusetts.

ROWE, JOHN H.
1942. A New Pottery Style from the Department of Piura, Peru. *Notes on Middle American Archeology and Ethnology*, No. 8, Carnegie Institution of Washington, D.C.

SAVILLE, MARSHALL H.
1907-10. *The Antiquities of Manabi, Ecuador.* 2 Vols. New York.

SPINDEN, HERBERT J.
1928. Ancient Civilizations of Mexico and Central America. *AMNH* Handbook Series No. 3. New York.

STRONG, WM. DUNCAN
1943. Cross Sections of New World Prehistory. *SI-MC*, Vol. 104, No. 2.
1948. The Archeology of Costa Rica and Nicaragua. *BAE-B*, No. 143.

STRONG, WM. DUNCAN and CLIFFORD EVANS, JR.
1952. Cultural Stratigraphy in the Viru Valley, Northern Peru. *CSAE*, Vol. 4.

TELLO, JULIO C.
1943. Discovery of the Chavin Culture in Peru. *AAnt*, Vol. 9, No. 1.

UHLE, MAX
1923. Civilizaciones Mayoides de la Costa Pacifica de Sudamerica. *ANH-B*, Vol. 6, No. 15, 16 y 17, pp. 87-92. Quito, Ecuador.
1933. Estudios Sobre las Civilizaciones del Carchi e Imbabura, *Talleres Tipograficos Nacionales*, Quito, Ecuador.

WILLEY, GORDON R.
1948. A Functional Analysis of "Horizon Styles." In "A Reappraisal of Peruvian Archaeology." *SAA-M*, No. 4.

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ENRIQUE JUAN PALACIOS (1881-1953)

Juan Palacios, a native of the state of Puebla, Mexico, received his A.B. from the University of Puebla. From adolescence he had shown a lively interest in the past, pre-columbian and colonial, of his country, and in 1908 he published the first account of the famous friary of San Francisco Acatepec, near Cholula. Nine years later, *Puebla, su territorio y sus habitantes*, a work of nearly 750 pages, appeared. In 1919 his account of the ruins of Tuxtepec, Oaxaca, saw the light, and in 1921 his *La piedra del calendario* appeared. In 1925, after some years of teaching, he joined the staff of the Dirección de Arqueología, later a part of the Instituto Nacional de Antropología e Historia. He wrote extensively on the archaeology of the Maya area and of Veracruz and adjacent Puebla, his two main interests. In 1926, he and Miguel Mendizabal discovered the important Maya city of Santa Elena Poco Uinic, in Chiapas (*En ols confines de la selva lacandona*, Mexico, 1928). He was intensely interested in the Maya hieroglyphic writing (*El calendario y los jeroglificos cronográficos mayas*. Mexico, 1933), and to him we owe the identification of the head for the number two (*Mas gemas del arte maya en Palenque*. Mexico, 1935). Many of the most important reliefs at Tajin were first published in *La ciudad arqueológica del Tajín. Sus revelaciones*, written in collaboration with Dr. Enrique Meyer (Mexico, 1932). He was also the first to publish on the ruins of Yohualinchan, Veracruz, although Miss Adela Breton had prepared a manuscript on the subject which was in the Saville library.

His publication, in 1951, of a Spanish version in blank verse of Vergil's *Fourth eclogue* and his great knowledge of Mexican majolica attest to the wide interests typical of a man of culture whose formative years fell in the pre-revolutionary period when much of the world, including Mexico, was spared our present mania for narrow specialization. His many friends in Mexico and in U.S.A. mourn his death.

—J. ERIC S. THOMPSON

A. T. HILL

In the passing of A. T. Hill, on March 21, 1953, Plains archaeology lost one of its most enthusiastic, capable, and colorful personalities. Largely self-trained, energetic, with a highly practical mind, and possessing unusual insights into problems of human relationships, he turned from a successful business career to full time and equally successful archaeological endeavor. His achievements demonstrate once again that a humble start in life and the lack of academic preparation in themselves need be no deterrent to a productive and influential career.

Born at Cisne, Illinois, November 29, 1871, Hill moved with his parents to a homestead in Phillips County, Kansas, in 1878. Dry land farming in those days was not an easy life. Mr. Hill's formal education ended with the fourth grade. Crop failures and economic depression drove him to try his hand at salesmanship, and he ultimately cast his lot with the rapidly developing automobile business. He remained in the business of marketing cars in Hastings, Nebraska, until the early 1930's when he became an active officer in the Nebraska State Historical Society, and moved to Lincoln.

Significantly, Mr. Hill's interest in archaeology began not in mere antiquarianism — that is, in a desire to collect and hoard relics, but in a purposeful attempt to find the answer to a troublesome historical problem. A long time student of early western history, he was an interested spectator in 1906 when the Kansas State Historical Society unveiled in Republic County, Kansas, a monument commemorating Pike's visit a century earlier to the Pawnee village on the Republican River. Dissatisfied with the spot so marked, Mr. Hill re-examined the relevant documents and began a search for another that would better conform to the contemporary accounts. In this he was successful; in 1923 he identified, and later purchased, what is unquestionably the correct site in Webster County, Nebraska. His privately financed investigations here, besides amply documenting his claims, were the first serious inquiry into Pawnee archaeology. They also convinced him of the soundness of what has since been designated the direct-historical approach to archaeology.

Stimulated by his findings, Mr. Hill steadily widened his field of interest. In the course of frequent business trips out of Hastings — trips that took him to many parts of central and western Nebraska and northern Kansas — he was constantly on the lookout for archaeological sites and collections. His salesmen, if they showed even a casual interest in his avocation, were expected to function as scouts, lining up contacts and prospects which were passed on to him along with their routine reports. Weekend digging in the Hastings region and tests at numerous other sites while he was on the way to or from some business appointment, eventually resulted in a considerable collection, housed for years at Hastings. Despite the unavoidably piecemeal nature of this earlier work, Hill convinced himself of the former existence of not one, but several, native cultures in the Nebraska region. He recognized as distinct, though he did not name, the Woodland, Upper Republican, Lower Loup, and Pawnee complexes. He persisted in his convictions despite the discouraging reaction of certain eastern professionals to whom he described his findings in the early 1920's.

(*Continued on next page*)

With his appointment in 1933 as Director of the Museum and of Field Archaeology for the Historical Society, Mr. Hill brought to his new post the same drive and organizing ability that had characterized his business career. He set up an exhibits program and installed an accurate catalog system. More important, he was instrumental in getting increased appropriations to support the museum and field research programs. Finally, he launched a series of field investigations that took him and his parties to nearly all sections of Nebraska. Though the Pawnee and their antecedents were always his first and main interest, he also spent three seasons along the west bank of the Missouri from the Kansas line to Homer, Nebraska. Utilizing whatever resources were available — private means, state appropriations, and finally federal relief funds, he worked Woodland, Nebraska Culture, Oneota, Upper Republican, Dismal River, and other sites widely scattered throughout Nebraska, as well as preceramic horizons in the western part of the State. The wealth of specimens, notes, maps, photos, and other records so amassed has been the basis for numerous reports by his colleagues and others. Such is their bulk and variety that they will still furnish important basic source material on Plains archaeology for years to come. Combined with his own collections, now deposited in Lincoln, they give the Society one of the largest and most comprehensive archaeological collections in the Plains area.

In the field, Mr. Hill developed an uncanny knack for locating habitation sites, and an enviable skill in their thorough excavation with limited manpower and time. He had a rare ability to get along with property-owners and collectors, and for persuading these and other casually interested local persons to lend a hand with the heavy work during his often hurried investigations. He was considerate of the welfare of his men, but insisted on an honest day's work and on good behavior. Complaints about the inconveniences of camp and field life usually drew caustic comment from him, and sometimes led to early dismissal. In this day of large scale operations, supported in relatively generous fashion by State and Federal agencies, it is easy to forget the handicaps under which Mr. Hill, like pioneers everywhere, carried on much of the work that was so basic to Nebraska and Plains prehistory.

Though he insisted on careful and full recording on his digs and was deeply scornful of careless or inept observation, his interest in specimens as such was always secondary to his concern with the way those specimens were used, and with house types, community patterns, subsistence economies, and the problems of culture change and chronology. He was deeply interested in the relations of man to environment in the Plains, and from his own rich experience and reflection he contributed penetrating observations to the studies of others along these lines. His belief in the usefulness of the direct-historical approach, wherever it seemed applicable, gave direction to much of the productive research in the Plains.

Failing health forced Mr. Hill to relinquish his post as an active officer of the Historical Society in 1949. His oft-expressed hope for a separate modern building in which the collections he had amassed would be properly housed has just been realized — but too late for Mr. Hill to witness personally the fruition of his dream.

My acquaintance with Mr. Hill began some twenty years ago, during my first field trip in the Plains with the newly established University of Nebraska Archeological Survey. Then, as later, he gave freely of his knowledge and understanding to anyone who inquired seriously. Looking back over those years of association, and leafing through a thick file of correspondence that passed between us, I am particularly impressed by the imprint left by this rough and ready scholar on Plains archaeology. Always ready and willing to extend a helping hand to a deserving beginner, he touched — and often deeply influenced — the lives of most of the professional archaeologists active in the Plains during the past two decades. Lacking academic training, he generally shunned formal recognition of his accomplishments by educational institutions. Yet, he possessed a strong sense of problem, and of personal and professional integrity. The desire to know, which lies at the root of all science, burned no less strongly in him than in those whom he helped along their way to a professional career.

To those of us fortunate enough to have worked intimately with Mr. Hill in field and laboratory, his passing brings to a close relationships we shall always cherish. We remember him as A. T., the grand old man of Plains archaeology, and wish him "Happy diggings."

WALDO R. WEDEL.

PUBLICATIONS REPORTING FIELDWORK CARRIED ON UNDER THE DIRECTION OF A. T. HILL

SHELDON, ADDISON E., ED.

1927. The War Between Nebraska and Kansas. *Nebraska History*, Vol. 10, pp. 159-261.

HILL, A. T.

1932. The Ruins of a Prehistoric House in Howard County, Nebraska. *Nebraska History*, Vol. 13, pp. 172-5.

HILL, A. T.

1933. Archeological Explorations of the Nebraska State Historical Society for 1933. *Nebraska History*, Vol. 14, pp. 174-7.

WEDEL, WALDO R.

1934. Contributions to the Archeology of the Upper Republican Valley. *Nebraska History*, Vol. 15, pp. 133-255.

WEDEL, WALDO R.

1936. An Introduction to Pawnee Archeology. *Bureau of American Ethnology, Bulletin* 112.

HILL, A. T., AND WALDO R. WEDEL.

1936. Excavations at the Leary Indian Village and Burial Site, Richardson County, Nebraska. *Nebraska History*, Vol. 17, pp. 3-73.

HILL, A. T. AND PAUL L. COOPER.

1936. The Schrader Site, The Champe Site, Fremont 1. *Nebraska History*, Vol. 17, pp. 223-92.

HILL, A. T. AND PAUL L. COOPER.

1937. The Archeological Campaign of 1937. *Nebraska History*, Vol. 18, pp. 238-359.

WEDEL, WALDO R.

1938. The Direct Historical Approach in Pawnee Archeology. *Smithsonian Miscellaneous Collections*, Vol. 97, No. 7.

COOPER, PAUL L.

1939. The Archeological Exploration of 1938. *Nebraska History*, Vol. 20, pp. 91-152.

HILL, A. T. AND MARVIN F. KIVETT.

1940. Woodland-Like Manifestations in Nebraska. *Nebraska History*, Vol. 21, pp. 143-243.

HILL, A. T. AND GEORGE METCALF.

1941. A Site of the Dismal River Aspect in Chase County, Nebraska. *Nebraska History*, Vol. 22, pp. 155-215.

HILL, A. T.

1942. Archeological Field Trips in 1942. *Nebraska History*, Vol. 23, pp. 82-5.

WEDEL, WALDO R. AND A. T. HILL.

1942. Scored Bone Artifacts of the Central Great Plains. *Proceedings of the United States National Museum, Smithsonian Institution*, Vol. 92, No. 3141, pp. 91-100.

CHAMPE, JOHN L.

1946. Ash Hollow Cave. *University of Nebraska Studies*, New Series, No. 1.

KIVETT, MARVIN F. AND A. T. HILL.

1949. Archeological Investigations Along Medicine Creek. *Notebook* No. 1, *Laboratory of Anthropology, University of Nebraska*, pp. 25-26.

KIVETT, MARVIN F.

1952. Woodland Sites in Nebraska. *Publications in Anthropology*, No. 1, *Nebraska State Historical Society*.

FACTS AND COMMENTS

WATERWORN ARTIFACTS FROM LATE PLEISTOCENE LAKE BEACHES IN NORTHERN OHIO

North of the watershed between the Ohio River and the St. Lawrence drainages, Ohio is a flat plain. It is an old lake bed, rising in shallow steps from the present shore of Lake Erie. The north edge of each "step" is marked by a "Lake Ridge," a fossil beach marking a stage in the recession of the post-glacial lake. In a few places wave action has cut a slight terrace where the old shore line met steeper than average terrain, but along most of the extent the "ridges" mark barrier beaches between the lake and a lagoon. Here they are as distinct as a railroad embankment would be.

There are three main ridges continuous across the state; these mark the longest pauses in the recession. In prehistoric times these were the main east and west trails, and today are followed along much of their length by the main east and west highways.

Geologists have named each of the stages of the recession of the post-glacial lake. These are listed below with their height above sea level and the popular name of the ridge for the important ones.

Name	Height Above Sea Level	Cause
Lake Maumee I	812	deglaciation
Lake Maumee II	760	retreat of ice
Lake Maumee III (South Ridge)	780	readvance of ice
Lake Arkona	710	retreat of ice
Lake Whittlesey (Center Ridge)	730	readvance of ice
Lake Wayne	660	retreat of ice
Lake Warren (North Ridge)	680	readvance of ice
Lake Lundy: Grassmere	635	retreat of ice
Lake Elkton	615	retreat of ice
Lake Erie	573	retreat of ice

The writer believes that this recession was a rapid one, requiring only a few centuries at the most. This belief is based on the small amount of wave erosion along the old shore lines as compared to the much greater erosion at the present level of Lake Erie. A radiocarbon date for Lake Lundy: Grassmere is only 8513 ± 500 B.P. (Johnson 1951). Since that date the lake level has dropped over 60 feet and wave erosion has cut vertical cliffs over 90 feet high in the Devonian shale near Cleveland, Ohio, and the Rocky River has cut a gorge over 100 feet deep through this same shale. Therefore through most of the elapsed time Lake Erie must have been close to its present level. The late George Frederick Wright, the glacialist, once remarked to the writer, that there were, most probably, remnants of glacial ice in Northeast Canada when Moses was arguing with Pharaoh.

Between the years 1908 and 1926 the writer found a number of waterworn artifacts while surface hunting these fossil beaches. Most specimens were found on or near habitation sites. This does not reflect the overall distribution of these waterworn artifacts but the fact that, after making the first preliminary reconnaissance to discover sites, there is no point in hunting nonproductive areas. Certain specimens were found apart from sites. None were found under ideal or test conditions.

All these artifacts are much worn. All of them, except for two flakes, show a very high polish which resembles "desert varnish." Some of them are deeply altered chemically; some of them are of materials practically unknown among normal artifacts found in the area.

In describing these specimens, the writer will use the name of the pertinent Pleistocene lake to denote the fossil beach on which the artifact was found. (Fig. 57.)

1. A scraper of blue-grey flint veined with white. This was found on the floor of a gravel pit at the Hilliard site. Lakewood, Cuyahoga Co., Ohio. It could have fallen from the surface or from any depth below the surface. Lake Whittlesey.

2. Honey colored translucent chalcedony. This was found at the crossing of the "South Ridge" and U.S. Route 18 in Huron Co., Ohio. Edwin Burr noticed it "several" feet below the surface while grading. Picked it up and gave it to me. Lake Maumee III.

3. White flint. This was found on the "South Ridge" in Lake Co., Ohio. Exact location not known as the finder had artifacts mixed from two sites along the ridge. Lake Maumee III.

4. Thin flake of brown jasper, triangular section. This and 5 were found in the gravel of what was the delta of the Huron River where it emptied into Lake Warren. This is about 70 feet above the present river level. Lake Warren.

5. White chert, triangular section flake, retouched. Lake Warren.

6. Golden yellow jasper. This was found about three inches below the sod in virgin soil while test trenching around the find of a very large unfinished "bannerstone." East side of Old Woman Creek, Erie Co., Ohio, about 25 feet above water level and 75 yards distant. Terrain elevation was *ca.* 615. Lake Elkton.

7. Orange colored jasper. Very much waterworn. This was found on the Esch mound site south of Huron, Ohio on the west bank of the Huron River. Elevation *ca.* 615; 40 feet above water level and about 50 yards from the bluff. In type this specimen resembles a very early percussion chipped type found in the Great Lakes area. Lake Elkton.

8. Mottled black and yellow flint. This was found in Dover Township, Cuyahoga Co., Ohio on the "South

Ridge" nearly 1½ miles from the nearest running water. Lake Maumee, III.

9. Mottled grey and orange flint, very much worn. This was found on the Heckleman site, which is on the west bank of the Huron river about one mile above Milan, Ohio; 60 feet above the river level and 50 yards from the bluff. The fossil beach at this location has been destroyed by the river valley, and the site, though gravelly, is about 10 feet below the level of the old shore line. Lake Warren.

10. Black flint. This was found on the very top of a small sand knoll just west of the mouth of Sawmill Creek, Erie County, Ohio. Elevation, *ca.* 615. Lake Elkton.

These specimens are undoubtedly artifacts. They show typical wear from being rolled in a stream bed or on a beach. They were all found above present stream levels and away from stream beds, so they can not be a product of stream rolling. They were all found on or in the gravels of Pleistocene beaches. The only common sense conclusion is that they were actually rolled on these beaches by wave action.

That fact dates these artifacts as Late Pleistocene in age. They antedate the fluted points found in the same area. The writer has found two such points near Milan, Ohio (Smith 1951) on a location that was 50 feet under water when certain of these waterworn specimens were being rolled on the beach of Lake Whittlesey, and he knows of a number of other fluted points found in northern Ohio below the Lake Whittlesey level. This does not mean that these waterworn artifacts are very much older than the Ohio Fluted points, but these facts do indicate that there was another and different culture present in northern Ohio during the same general time period and immediately preceding the fluted point complex in this local area.

MAP REFERENCES

U.S. Geological Survey Topographical Maps of Ohio
Nos. 1, 8. Berea Quadrangle.
No. 2. Norwalk Quadrangle.
Nos. 4, 5, 6, 7, 9, 10. Sandusky Quadrangle.

BIBLIOGRAPHY

JOHNSON, FREDERICK
1951. Radiocarbon Dating. *Memoirs of the Society for American Archaeology*. No. 8. Salt Lake City.

SMITH, ARTHUR GEORGE
1951. Fluted Points from Milan, Ohio. *Southwestern Lore*. Vol. 17, No. 1.

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Norwalk, Ohio
January, 1953

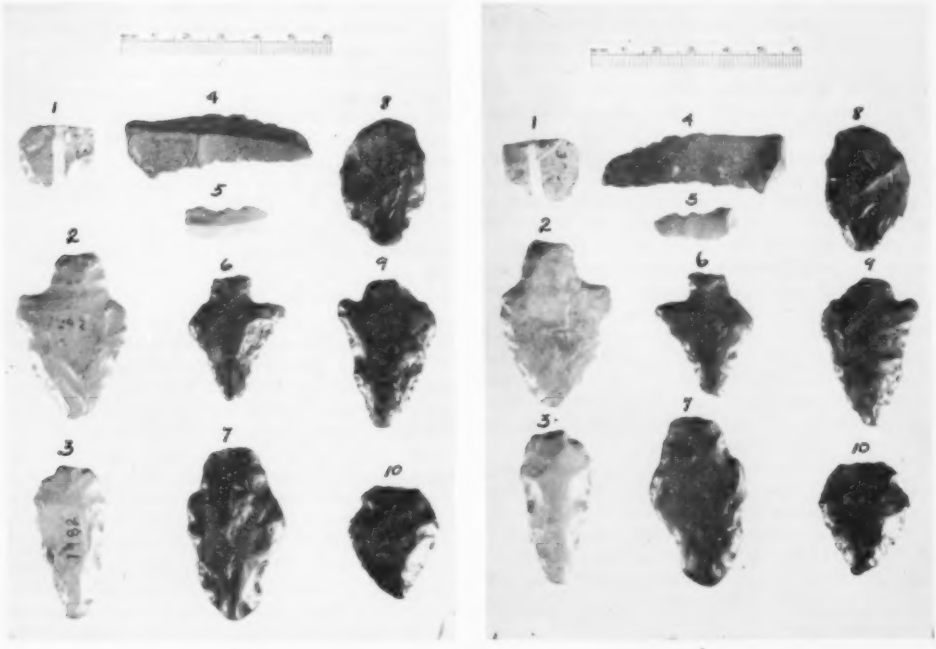

FIG. 57. *a*, waterworn artifacts from fossil beaches of post-glacial lakes in northern Ohio; *b*, reverse side of artifacts in *a*.

RADIOCARBON DATES—A SUGGESTION

As we read the archaeological reports of recent years, many of us are becoming slightly appalled at the vast store of information that is coming to us each month from the laboratories processing radiocarbon specimens. This material is rapidly being absorbed into the archaeological literature where, in its present form, it presents a slightly confusing picture. Most of us learned our archaeological chronologies in the old Gregorian calendrical system and to have, for example, a date of 8431 ± 475 B.P. suddenly thrown at us gives our delicate nervous systems quite a shock. Undoubtedly many archaeologists will confess that they must mentally subtract 1950 years from such a radiocarbon date to be able to fit it into their long-established chronological systems.

A more serious criticism is this: the literature is rapidly becoming flooded with radiocarbon dates, dating back at present from the years between 1948 and 1953. The physicists seem to feel that time stopped somewhere around the year 1950, and thus all historical dating in the future can be made from that date. What of the archaeologists of 2000 or 2050 A.D.? Much of the material being dated now will never be dated again, which means that a student in 2050 A.D., to be assured of complete accuracy, must look up the year that the test was made, then add the number of intervening years between that date and 2050. Failure to consider the intervening years after the time of test will give a margin of error that is negligible at present, but which will increase with each passing year, and, as scientists, we should be striving for as much accuracy as possible. If we insist on using this method for recording dates, I would suggest that the date of the test be included wtih the radiocarbon date thus: 8431 ± 475 (B. 1952).

A tendency in some of our current anthropological literature has been to clutter the subject with such an excess of technical terms that the writers become entangled in their own verbage and fail completely to put across the point for which they were aiming. The only point in this sort of writing seems to be to impress people, and perhaps this new method for writing radiocarbon dates is part of that same tendency. I will admit that a date of 3010± 225 B.P. looks much more impressive to the uninitiated reader than the date 1058 B.C. ±225 years, but is our primary aim to impress people with our brilliance or is it to transmit knowledge in a readily understandable manner?

As scientists, we seem to be saddling ourselves with an awkward system which will grow more awkward and cumbersome as time goes on and, more important, will be harder to eliminate with each passing year. Why don't we go back to the old established calendar which, with all its faults, is still less cumbersome than the new one will become in a few years.

LEE ABEL
Museum of Northern Arizona
Flagstaff, Arizona
February, 1953

NOTCHED STONES IN SOUTHWESTERN SITES

Tabular stones, either with parallel sides or sides that taper to a blunt point at one end and bearing a wide notch on the other end, have been found *in situ* in or resting on floors of structures over a considerable area of the Southwest. Sites which have yielded these stones and data pertaining to them are listed in the accompanying figure. Sources for these data are contained in the bibliography.

In 1932, Haury suggested and demonstrated that the notched stones at Roosevelt 9:6 in the Tonto Basin, Arizona, held logs which supported an elevated floor. Since that date these stones periodically have been recovered from sites distributed over a wide area in association with structures dating from before 500 A.D. to 1100 A.D. and possibly later. However, in no case have they been found in such quantities on or in house floors as at Roosevelt 9:6. When the circumstances of these finds are considered it seems quite likely that the notched slabs of all other sites excavated since 1932 were put to a different use.

A case in point is site 3, Zion National Park. A rectangular storeroom (8'2" x 5'3") at this site, contained two notched stones. One was found in the southeast corner of the room, 2' from the east wall, lying on the floor and the other in the northeast corner, 1'6" from the east wall, the notches paralleling the short (north-south) axis of the room. In the opposite corners, 1'9" from the west wall, were two small piles of rocks. Directly against the south wall, near its center, was a stone step imbedded in the floor, the top of which was below the level of the courtyard immediately south of the storeroom. If these notched stones in combination with the two small rock piles supported an elevated floor, of what possible function was the step, a feature that occurs quite often in this region? There was no firepit in this (or any other) storeroom, so there would be no need for an open area in a postulated elevated floor near the entry as was the case at Roosevelt 9:6.

Since the floor of this room was paved with slabs and covered with clay, the need for an elevated floor for protection from rodents is not apparent. Moreover, it is doubtful that two logs, resting on such widely separated supports, would in turn have supported a very substantial elevated floor. It appears more likely that these notched slabs and rock piles at both ends of the room, at the Zion site, supported a log across the short axis of the room, which acted as a frame or base for a raised shelf, platform or bench. The cross pieces, that may have rested on the log, could easily have been tied into the adjoining wall which contains considerable mortar between the rock slabs. Martin described and illustrated a similar arrangement of notched stones in a pit-structure in the Ackmen-Lowry area of southwestern Colorado, which he suggested may have been a bench (Martin, 1939, p. 378 and Fig. 98).

In 1930, Stubbs described a divided storage bin situated against a room wall at his site 2 in southern New

Mexico. A notched stone was found *in situ* at one end of the storage unit and a hole in the floor, in a similar position, at the other end of the unit. These lined up with a hole in the partition which divided the bin in two, and Stubbs suggested that a log may have rested on the notched stone at one end and on the missing support at the other end passing through the hole in the partition. This type of frame is similar to that postulated for the storeroom at Zion.

The few, but widely separated, notched stones in or on the floors of structures, some of which contained firepits, at the Fitzmaurice and King's Ruins of central Arizona would have been less able to support an elevated floor than the notched stones at Zion, since these rooms are considerably larger. The alignment of the notches of those stones found *in situ*, near the corners and close to the short walls of these rooms, differed from those discussed above by being parallel with the long axis of the room. If these stones, found *in situ* and in one case only at one end of a room, supported a platform or bench, the frame would have had to be constructed in a manner different from that postulated above—probably a short pole from the notched stones to the adjacent short wall with a long pole lying across the short poles at either end.

A probably related type of shelving occurs at Montezuma Castle in central Arizona and at a site on Bright Angel Creek in northern Arizona (Judd 1926, p. 138 and Pl. 34b, and National Park Service files). In these cases, both ends of a log or logs were imbedded in opposite walls a few feet above the floor, next to the short wall at one end of a room. Probably also related are many so-called "secondary roof supports" in Hohokam structures of southern Arizona. The Snaketown report illustrates a forked post supporting a fragment of a pole in the crotch, about 45 cm. above a Sacaton phase storeroom floor (Plates 17b and 22b). Sayles suggested this may have served as a support for a low shelf on which storage had been placed. A few other houses at this site do exhibit a number of interior postholes situated near the wall, which may have contained forked posts similar to the example above (Figs. 23, 28, 29, 31, 32, 34). These may indicate that benches or raised platforms may have been fairly common. Other "secondary roof supports" may have acted as stands, such as those from Guaraheo (Di Peso 1950, pp. 1 and 2)

TABLE 5

Site and Location	*Provenience of Stone*	*Length*	*Width*	*Thickness*	*Phase of Structure*	*Estimated Date*	*Firepit in Structure*	*Remarks*
Site 3—Zion Nat'l Park	Lying on floor in 2 corners of storeroom	?	?	?	Developmental Pueblo	pre-1100	No	2 piles of rock in opposite corners
Swartz Ruin—Mimbres area	On floor of pueblo room	9½"-39"	7"-10½"	1"-1½"	P III ?	post-1100 ?	?	Room 72-late
Site 2—Alamogordo area	*In situ* in storage bins in pueblo room	8" above floor	?	?	?	*ca.* 1100 ?	?	
Old Town—Mimbres area	Found in back dirt of vandal's excavations	48"	15" upper end	?	?	*ca.* 1100 ?	?	
Three Courts—Wupatki area	In fill of a pit	? broken	7¼"	½"	?	1070-1130	No	Evidence of burial in pit. Slab for raised platform?
Fitzmaurice Ruin—Agua Fria	*In situ* in floor of pueblo and 1 on floor	15"-23"	5"-16"	1"-5"	?	post-1050	Yes	Near corners of room
Jagged Tooth Ruin—Agua Fria	On surface within a boulder outline	25"	7"	2"	?	post-1100 ?	No ?	Rectangular boulder outline with "opening" on one long side
King's Ruin—Chino Valley	On floor of jacal	24"	12"	?	?	pre-1050 ?	No	No evidence of holes in floor for the notched stones
Snaketown—Gila Basin	*In situ* on jacal floor	17-¾"	Forked pole with small log *in situ* in fork		Sacaton	900-1150	Yes	Was employed as storeroom at time structure burned
Roosevelt 9:6—Tonto Basin	*In situ* in floors of jacals (many)	*ca.* 13"-18"	4"-9"	*ca.* 2"	Santa Cruz	700-900	Yes	Also jacals with "secondary postholes" which may have been benches
Flattop Site—Petrified Forest	On floor of 2 slab-lined houses	7½"-8"	3"-9"	2"-3¼"	Flattop	pre-500 A.D.	Fire area	One leaning against slab wall of house
Snaketown—Gila Basin	postholes in floor of jacal	Postholes in a pattern similar to notched stones *in situ* at Roosevelt 9:6			Estrella	*ca.* 100 A.D.	Yes, but no ashes found	Groove (for drainage) encircles floor and runs across entry passage

to hold various objects. These various possible uses for short posts within a house may indicate that secondary roof supports were not as common as has been thought.

There may be some connection between the use of notched stones to support elevated floors as at Roosevelt 9:6 and the exceptional numbers of postholes found in the floor of an Estrella phase (some time before 500 A.D.) Hohokam house at Snaketown in southern Arizona (Pl. 20b and Figs. 33 and 36). The postholes of this structure appear to be in a pattern similar to that exhibited by the notched stone houses of the later Colonial period (700-900 A.D.) sites at Roosevelt 9:6. If these postholes in this Estrella phase house, so close together that one could not comfortably walk between them if the posts reached from floor to ceiling, contained short forked posts to support beams for an elevated floor, it appears that this trait of a raised floor may first have been used at an early date in the Southwest, perhaps coming in with the introduction of architecture in southern Arizona.

In the Southwest, elevated storage structures outside of the house dwelling are known among the historic Yuman and Piman groups and wall shelves are found among the prehistoric and historic pueblos. Present data do not indicate raised platforms or benches within structures survived beyond the 1100's or elevated floors beyond the 900's in the Southwest, much less into historic times.

Storage around walls on raised planks and bed platforms have been recorded in historic times in the western portion of the northern hemisphere along the coast of northwestern United States and southwestern Canada. There is, however, no evidence to date with which to link the elevated floors or benches of the prehistoric Southwest with the known historic, and possible prehistoric, distribution in the Pacific Northwest.

The use of elevated floors can imply protection from moisture or rodents in dwelling or storage structures. If protection from ground moisture was the prime factor, the pre-500 to at least 900 A.D. range in the use of such features may be of significance in the interpretation of the ecological story of the Southwest.

BIBLIOGRAPHY

Cosgrove, H. S. and C. B.

1932. Swartz Ruin. *Peabody Museum of American Archeology and Ethnology. Papers*, Vol. 25, No. 1.

DiPeso, Charles C.

1950. A Guaraheo Potter. *The Kiva*, Vol. 16, No. 3, Arizona Archaeological and Historical Society. Tucson.

Gladwin, Harold S., et al

1937. Excavations at Snaketown. *Medallion Papers* No. 25, Gila Pueblo. Globe.

Haury, Emil W.

1932. A Hohokam Site of the Colonial Period. *Medallion Papers* No. 11, Gila Pueblo. Globe.

Judd, Neil M.

1926. Archeological Observations North of the Rio Colorado. *Bureau of American Ethnology*, Bulletin 82. Washington.

Martin, P. S.

1939. Modified Basketmaker Sites, Ackmen-Lowry Area, Southwestern Colorado, 1938. *Anthropological Series, Field Museum of Natural History*, Vol. 23, No. 3. Chicago.

Schroeder, Albert H.

n.d. Jagged Tooth Ruin, Arizona and Site 3—Zion. Paper on the archeology of Zion National Park. Mss. in preparation.

Smith, Watson

1952. Excavations in Big Hawk Valley. *Museum of Northern Arizona, Bulletin* 24. Flagstaff.

Spicer, Edward H. and Louis R. Caywood

1936. Two Pueblo Ruins in West Central Arizona. *University of Arizona, Social Science Bulletin* No. 10. Tucson.

Stubbs, Stanley

1930. Preliminary Report of Excavations near La Luz and Alamogordo, New Mexico. *El Palacio*, Vol. 29, No. 1. Santa Fe.

Albert H. Schroeder
National Park Service
Santa Fe, New Mexico
December, 1952

OBSERVATIONS ON THE BUTCHERING TECHNIQUE OF SOME ABORIGINAL PEOPLES NO. 2*

In a brief report, which was read before the 8th Conference for Plains Archeology by George Metcalf, I attempted to reconstruct the procedure by which the carcass of an antelope was prepared for food. The inferences thus drawn were based upon the ratio of the various elements to each other and to the greatest number of individuals represented, as well as the location of the breaks or cuts in the bones. Since the antelope is one of the smaller food animals and could be moved to a convenient butchering place, the question immediately posed itself: "How would size affect the butchering technique since a bison must necessarily be butchered where it is killed?"

The bison bone which provides the basis for this study was collected during the excavation of two archaeological sites near Pierre, South Dakota. The Dodd site was a multi-component village, but there was evidence of only a single cultural complex at the Phillips Ranch site (Lehmer, 1952). Lehmer has assigned the earliest occupations at the Dodd site to the Monroe and Anderson foci which are characterized by long-rectangular houses and cord roughened pottery. Both of these complexes probably date from before 1500 A.D. The final occupation at the Dodd site has been assigned to the Stanley focus, and the Phillips Ranch complex to the Snake Butte focus. Both of these foci are characterized by round houses and pottery with simple stamped bodies. The Stanley focus may be roughly dated from 1700 to 1750 and the Snake Butte focus from 1750 to 1800.

Judging by the tastes of Indians living in this area within historic times, there were two sources of bison

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TABLE 6. FREQUENCY DISTRIBUTION OF THE VARIOUS ELEMENTS OF THE SKELETON FOUND IN THE TWO SITES.

The Numbers Indicate the Number of Individual Bison Represented.

Focus	Monroe		Anderson		Stanley		Snake Butte	
No. of Individuals	59		36		19		68	
Element	*Unworked*	*Worked*	*Unworked*	*Worked*	*Unworked*	*Worked*	*Unworked*	*Worked*
Skull, occiput	6		2		4		2	
" , horn-cores	7		1		2		8	5
" , maxilla	12		15		8		5	
Mandible	55		29		19		19	
Hyoid	8		9		3		7	2 ?
Vertebra, atlas	6		5		1		7	
" , axis	1		1		—		2	
" , cervical	5		4		1		4	
" , dorsal	3		2		1		2	
" , lumbar	4		3		1		1	
" , sacral	—		3		—		2	
" , caudal	2		1		1		1	
Scapula	46	4	29	4	5	10	12	56
Humerus, proximal	11	1	3	1	5	1	10	5
" , distal	28		19		9		20	
Radius, proximal	37		22		3		15	
" , distal	23		11		6		11	
Ulna, proximal	36		19		4		9	
Metacarpal, proximal	17		11		3		12	
Pelvis	11		8		6		4	
Femur, head	10		9		3		5	1
" , proximal	10		5		2		3	
" , distal	4		6		1		5	1
Tibia, proximal	5		5		1		7	1
" , distal	59		34		12		23	
Astragalus	31		36		9		10	
Metatarsal	16		7		3		10	3

meat for these people—the hunt and those which were drowned by falling through the ice. That these peoples utilized both sources is purely conjecture because the preservation of the bone does not permit any such grouping. Also we are handicapped in that a comparable study on a large bison kill or hunting camp of equivalent cultures has not been made.

The numerical count of the elements found in a site is subject to the accidents of preservation, the length of occupation, and the size of the excavation, but the ratio of the various elements to each other and to the greatest number of individuals represented, from an excavation which satisfies the archaeological requirements, should provide an adequate sample for this type of study. Whenever possible both the worked and unworked bone have been considered. Throughout this study the number of individuals means the greatest number represented by any single element; i.e., in the Monroe focus the greatest number shown is by the distal end of the right tibia, which is 59. Any calculations for that focus are based on that number. In calculating percentages, the worked bone is divided by two and the result is added to the largest number for that element.

An examination of Table 6 reveals that the number of certain elements is consistently close to the maximum number of individuals represented (lower jaws, scapulae, and distal ends of the tibia), while others (proximal end of the tibia) are conspicious by their scarcity. In some cases the small number of recovered elements (proximal end of the humerus) can be partially explained in that it was converted into a tool and worn out. In other cases (dorsal vertebra) we are obliged to assume that they were left at the place of butchering and not brought into the village.

Skull. In all foci a relatively small percent of the individuals are represented by the occipital portion of the skull and in the present state of our knowledge a cultural trend is not evident by a chronological distribution of the percentages found in the different foci (Monroe, 10; Anderson, 5.5; Stanley, 21; Snake Butte, 2.5). The same is true for the horn-cores (12, 2.8, 10, 16.6). With the exception of the Snake Butte focus, the greatest number of skulls are represented by the

maxilla which are badly broken as though the muzzle had been chopped free from the rest of the skull. Possibly the nasal cartilages and upper lip were considered a delicacy as some of the northern Indians do those of the moose. About the latter according to Cahalane (p. 52): "As a rich stew it is said to taste much like green turtle fat." The head as a whole is a heavy, unwieldly part of the animal, with a minimum of usable meat and, except for special purposes, would be unprofitable to transport any distance. The brain, if desired, could be easily removed at the kill.

Mandible. In all except the Snake Butte focus the number of lower jaws is close to the greatest number of individuals represented. Since none of the jaws appear to have been used for anything, presumably they were brought into the village with the tongue. Certainly the easiest way to remove the tongue would be to smash the ascending ramus of the jaw and remove jaws and tongue as a unit for further cutting at a more convenient time. A possible explanation of the small percentage (24) of lower jaws in the Snake Butte focus may be that these people did most of their hunting considerable distances from the village and the tongue was eaten at the hunting camp (Wilson, p. 249).

Hyoid. The hyoid would normally be removed with the tongue, but it is a small bone and might be overlooked or lost. Some may have been converted into small spatulas or quill flatteners but, after being worked, it is very difficult to be certain of the identification.

Vertebrae. Very few individuals are represented by the vertebrae and the distribution of the various sections of the trunk in the foci does not present any noticeable pattern. The inference then is that the axial muscles were cut away and the vertebrae left at the kill. The vertebrae found may represent material brought in to feed the dogs from kills close to camp or animals retrieved from the river. Of interest here is the very small number of caudal vertebrae, indicating that the tail was not in general use as an ornament or left attached to the hide after skinning.

Fore limb. Since bison do not possess a clavicle, the fore limb could be cut loose from the trunk and brought in as a unit for further cutting at a more convenient time. That the sum of the worked and unworked scapula in all except the Snake Butte focus is close to the number of individuals represented indicates that such was probably the case. (The unusually large number of worked scapulae in the Snake Butte focus will be considered in a later paragraph). The very small number of the proximal end of the humerus can be explained in that either it was converted into an abrader or was smashed beyond recognition in the preparation of bone grease. The number of the distal end of the humerus, proximal end of the radius, and the proximal end of the ulna agree fairly well with each other, but fall considerably below the number of individuals. A number of fragments of each of these elements were omitted from the count because they were so badly broken that it was impossible to tell the right from the left. Presumably, then, the missing elements were smashed beyond recognition in the preparation of bone grease. The number of the distal end of the radius and the proximal end of the metacarpal agree rather closely with each other but fall considerably below the number of individuals or the proximal end of the radius. Since the lower limb does not carry any usable meat it is conceivable that it was chopped off, either through the distal end of the radius or through the carpus, and left at the place of kill in order to reduce the load. As suggested by Lehmer, the proximal ends of the metacarpals may represent the animals retrieved from the river, since the distance is so short that the excess weight of this element would be negligible. There is a decrease in the ratio of the metacarpals to the number of individuals, from 30% in the Monroe and Anderson foci to 15% in the Stanley and Snake Butte foci.

Hind limb. In order to remove the hind limb from the trunk it would be necessary to cut through bone. From the material available this seems to have been accomplished in one of two ways; to cut the ilium just back of the sacral attachment and split the pelvis at the symphysis, or cut through the neck of the femur, thus freeing the shaft from the pelvis. After the bone had been exposed a single blow with a stone ax would suffice for either method. At times both methods appear to have been used since the number of the severed heads of the femora agree very well with that of the pelves (5 to 30 per cent of the individuals). The inference to be drawn is that the pelves and heads of femora represent the animals killed close to camp or retrieved from the river.

The small number of proximal and distal ends of the femur and the proximal end of the tibia, when compared with the distal end of the tibia, certainly suggests that most of these elements were smashed beyond recognition in the preparation of bone grease. That so many of the distal ends of the tibia are preserved suggests that it served as a handhold for steadying the limb on the anvil stone while the remainder was being smashed with a hammer stone.

As with the metacarpals, the number of metatarsals is far below that of the individuals represented, 26% in the Monroe focus, 20% in the Anderson focus, and 16% in the Stanley and Snake Butte foci. Some of the metatarsals were converted into hidescrapers but not enough were recovered to account for the discrepancy. Consequently, it seems highly probable that the metatarsals were left behind at the kill to lighten the load to be brought into the village. Perhaps, as Lehmer suggested, the metatarsals present represent the animals retrieved from the river, since the distance would not be great enough to make this element an excessive burden. Also the actual count of the metatarsals, both worked and unworked, agrees quite well with that of the metacarpals.

It appears that the ankle was a favorite point of cutting off the lower limb, since most of the astraguli and

calcanei are broken or defaced. Some, which were not counted, were damaged to the extent that they could not be assigned to either side.

Butchering Procedure

Although we cannot be certain of the chronological order of the various acts we can imagine that, with a large bison in which the skin was split down the middle of the back (Wilson, pp. 246 and 252), the procedure was somewhat as follows: after the skin had been removed from the sides of the trunk and upper legs and lay flat on the ground on either side, the axial muscles were cut away and laid on the skin to keep them as clean as possible. If the head was wanted the neck was chopped through between the atlas and axis; otherwise, it might be severed anywhere. The tongue was removed by smashing the ascending ramus of the jaws and cutting both free of the skull. Next the limbs were cut free from the trunk and the ribs of both sides were chopped through close to the backbone. The backbone was then lifted free from the trunk, and the kidneys and tenderloin removed. The backbone was then discarded. The viscera were then removed, saving possibly only the liver, heart and some of the intestinal fat. The basket was then rolled on its side and the skinning of the legs and trunk finished for that side. This procedure was repeated for the other side. If the kill was some distance from the village, the lower legs were removed by chopping through the wrist and ankle. The brisket was then freed from the basket by cutting through the episternal ribs and both were piled with the rest of the meat. The hide was then split down the middle of the belly. All of the meat was piled on one-half of the hide and covered with the other half to await transportation to the village or hunting camp.

It is not the purpose to enter into a discussion of the number of individuals occupying a single house, but it is common knowledge that infant mortality among aboriginal peoples is very high. It is unusual for more than 4 or 5 out of 12 to 15 children to grow to maturity. Consequently the maximum number of occupants of one-family houses will be small. For purposes of illustration, I have rather arbitrarily selected 4, 5 and 6 as the number of occupants for each house and 15, 20 and 25 years as a period of occupation as reasonably conservative numbers.

A conservative estimate for the meat requirement is taken as one-half pound of lean meat, or equivalent, per person per day. For rapidly growing children, people doing hard physical labor, or under exposed weather conditions, the requirements are much higher. The amount of meat per bison is based on the results of modern butchering practices with prime beef, which shows that only very little over one-half of the live weight of a steer is usable meat. Thus a 1000 lb. bison would deliver only 500 lbs. of usable meat with modern, efficient methods of butchering. With the tools and methods used by these people the usable amount of meat would be much less. An examination of Table 7

Table 7. A Comparison of the Four Foci with Different Periods of Occupation and Number of Occupants per House.

Focus	Monroe	Anderson	Stanley	Snake Butte
Number of bison	59	36	19	68
Houses excavated	4	7	9	10
A. 6 people per house; 25 year period of occupation				
Number of people	24	42	54	60
Bison per village per year	2.36	1.44	0.74	2.72
Minimum meat requirement per village per year	4380 lb.	7665 lb.	9855 lb.	10950 lb.
Meat per year represented by the bone	1180 lb.	720 lb.	370 lb.	1360 lb.
B. 5 people per house; 20 year period of occupation				
Number of people	20	35	45	50
Bison per village per year	3.0–	1.8	0.95	3.4
Minimum meat requirement per village per year	3650 lb.	6387 lb.	8212 lb.	9125 lb.
Meat per year represented by the bone	1500 lb.	940 lb.	475 lb.	1700 lb.
C. 4 people per house; 15 year period of occupation				
Number of people	16	28	36	40
Bison per village per year	3.9	2.4	1.27	4.53
Minimum meat requirement per village per year	2920 lb.	5110 lb.	5570 lb.	7300 lb.
Meat per year represented by the bone	1950 lb.	1200 lb.	635 lb.	2265 lb.

Meat requirement = ½ pound per person per day; 1000 lb. bison produces 500 lbs. usable meat.

makes it obvious that the amount of usable meat, as shown by the bison bone found in the site, is far below the minimum requirement for survival. Where, then, did they get the additional concentrated proteins?

Group hunts, or bison kills, appear to have been a standard practice since the time of the earliest peoples (Folsom, Yuma, etc.). With the earth lodge peoples the group hunts probably took place a considerable distance from the village in order to avoid the annoyance of wolves and bears—both of which dearly love carrion. The remains of 50 or 60 bison would become very fragrant after a few days in the hot summer sun and would attract both wolves and bears for many miles. In order to avoid transporting excess weight a long distance it is conceivable that the meat was stripped from the skeleton and partially or wholly processed at the hunting camp. If this premise is acceptable we are then permitted to assume that the bone found in the site represents the bison killed locally or retrieved from the river.

An examination of Table 6 shows a gradual increase in the number of scapula hoes. In the Monroe, Anderson, and Stanley foci the sum of the worked and unworked scapulae is very little below the number of individuals represented by any other element, while in the Snake Butte focus the sum of the worked and unworked scapulae (68) is nearly three times that of the distal end of the tibia (23). Thus, we have recorded from this site 45 bison which are represented by scapula hoes and no other element. The inference to be drawn is that the bison obtained locally were inadequate to supply the demand for agricultural and other implements and it was necessary to bring scapulae from the group hunt.

Conclusions

Because of the lack of this type of data for the time gap between the Anderson and Stanley foci, a trend in butchering technique cannot be identified at this time. An examination of Table 6 shows considerable difference in the frequency distribution of the various skeletal elements brought to the village by each focus. If the examination is narrowed to a comparison of the Monroe with the Anderson or the Stanley with the Snake Butte focus, it is seen that the frequency distribution falls into the same over-all pattern, but there are some rather wide differences which may have cultural significance such as the parts of the skull in the Monroe and Anderson foci. Consequently, there is reason to believe that with a sufficient number of such studies, placed in their proper chronological order, the results will be compatible with other cultural trends.

BIBLIOGRAPHY

Cahalane, Victor H.

1947. *Mammals of North America.* The Macmillan Company.

Leechman, Douglas

1951. Bone Grease. *American Antiquity*, Vol. 16, No. 4, pp. 355-6.

Lehmer, Donald J.

1952. The Fort Pierre Branch, Central South Dakota. *American Antiquity*, Vol. 17, No. 1.

Wilson, Gilbert L.

1924. The Horse and Dog in Hidatsa Culture. *Anthropological Papers, American Museum of Natural History*, Vol. 15, Pt. 2.

White, Theodore E.

1952. Observations on the Butchering Technique of some Aboriginal Peoples: I. *American Antiquity*, Vol. 17, No. 4, pp. 337-8.

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River Basin Surveys
Lincoln, Nebraska
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ON A SUPPOSED MESOAMERICAN "THIN ORANGE" VESSEL FROM ECUADOR

Interest has recently increased in problems of pre-Conquest contact between the two foci of high culture in the New World, Mesoamerica and the Andean Area. In approaching this question, three major categories of culture diffusion should be recognized at the outset, since each requires a different methodological approach on its own level. The first category would include such basic foundation elements as the cultivation of maize and other closely associated plant staples, pottery, metallurgy, weaving, architecture, etc.; the second, such considerably more specific traits as highly specialized technological processes in various crafts, distinctive art styles, unique design motifs, etc.; and the third, actual trade objects manufactured in one region and imported into the other.

There has been more agreement concerning the actuality of diffusion of at least some first category traits than of those in the second, where the claims when critically examined often turn out to be founded on highly subjective criteria. As for the third category, the striking thing here is the marked paucity of claims of finds of this type. This is perhaps not surprising in view of the fact that discoveries of genuine trade objects have also been virtually absent in such areas so much closer geographically to, and so clearly connected inter-culturally with, Mesoamerica as the southwestern United States and the Mississippi Basin.

To date, the most serious claims for the South American origin of certain objects found in Mesoamerica have been made by Lothrop (1936; 1952). One, the "Quimbaya" style gold pendant dredged up from the Sacred Cenote at Chichen Itza, seems indubitable. The other three, however, the two Chimu-like objects found in Tomb 7 at Monte Alban (a plumed gold crown and a copper scallop-shell shaped artifact), as well as the Zacualpa (Guatemala) gold plaque, for which a Chavinoid-Chimu source was originally postulated, seem much more doubtful, although strong southern stylistic influences may have been at work in all three cases.

As for objects travelling in the other direction, in 1931 Nordenskiold wrote: "Hitherto there has not been discovered in South America a single object of indisputable Mexican or Central American manufacture" (Nordenskiold, 1933, p. 292). Only two years later, however,

Max Uhle put forth a claim in direct opposition to this dictum, maintaining that a pottery human effigy vessel discovered during the 1920's on the Hacienda Cusín near the lake and village of San Pablo, Cantón Otavalo, Imbabura province in the north highland region of Ecuador, was of Maya manufacture (Uhle, 1933). According to Uhle, the piece was found by two natives of San Pablo in a small tomb exposed by erosive action near the road leading from the hacienda to the village. He believed the vessel, which he compared stylistically with figurines from Yucatan and especially with Catherwood's drawings of Palenque reliefs, had probably been made in a Maya station in western Central America and transported by immigrants from Salvador to the San Pablo region. He further saw in its discovery the ultimate proof for his theories as to the Maya origin of South American high culture.

His arguments carried little weight and the matter might have been forgotten had not a leading Ecuadorian scholar, the late Jacinto Jijón y Caamaño, revived the claim from another point of view in a note published in the January, 1949, issue of *American Antiquity* (Jijón y Caamaño, 1949; briefly reiterated, *idem*, 1951, p. 172). Jijón agreed with Uhle that the vessel had been fabricated in Mesoamerica and imported into Ecuador, but proclaimed it to be an example of Mesoamerican "thin orange" ware rather than of Maya manufacture in the narrower sense. Some sort of preliminary comment seems overdue, although ultimate solution of the problem will depend on a technological analysis of the specimen itself.

Since both Uhle and Jijón have illustrated and described the vessel in some detail, it will not be repeated here. The latter based his identification, aside from its orange cinnamon color and surface texture, which in themselves prove nothing, on its similarity in form to undoubted thin orange effigy pots from Teotihuacan, Toluca, Xalixintla (Puebla), and Kaminaljuyú (Teotihuacan: Seler, 1915, Tafel 53, 4; Toluca: Kidder, Jennings, and Shook, 1946, Fig. 194, b; Xalixintla: Palacios, 1937, Fig. 15, p. 21; Kidder, Jennings, and Shook, 1946, Fig. 195, a; Kaminaljuyú: *ibid*, Figs. 192, a, 193). Judging from the published illustrations, it must be conceded that the general configuration of these pieces is unquestionably close to that of Cusín, i.e., the male figure seated cross-legged, hands on knees, the thorax forming the body of the vessel. The following important differences, however, stand out: the silhouette of the rear jar in Cusín (nearly vertical) contrasts sharply with the Mesoamerican specimens (lower part constricted, upper part swelling outward to a fairly high shoulder, and low vertical rim); the arms of the Cusín figure extend out in a more rigid fashion, the ear plugs are much smaller, and the head is attached in a different manner to the vessel rim and projects a good deal further above it than do those of the Mesoamerican group. The following characteristics are also unique to Cusín: the smooth bulbous headdress, or cap, with its suggestion of cranial deformation, the prominent navel, and the nose button.

Jijón also fell into the mistake of confusing "thin" with "fine" orange, apparently under the impression that these were merely variant terms for the same ware. As defined by the majority of Mesoamerican specialists, the two are quite distinct, both in technique of manufacture and chronological position, the former belonging on the Teotihuacan II-III-Tzakol-Esperanza level, and the latter, in its "X" form at any rate, being a diagnostic of the somewhat later Tula-Mazapan-Mexican Chichen Itza period (Kidder, Jennings, and Shook, 1946; Brainerd, 1941). "Thin orange" was first recognized by Seler and has since been the subject of studies by Linné, Armillas, and Kidder, as well as technical analyses by Beskow, Zenzén, and Shepard. Its distinctive paste, temper, color, and decorative technique make it easily recognizable wherever found, and it seems to have had but one center of manufacture, not yet positively identified, perhaps in the Basin of Puebla (see discussion in Kidder, Jennings, and Shook, 1946, pp. 197-98). This ware was traded widely throughout Mesoamerica, from Colima in the northwest to Copan in the southeast, and it is not absolutely inconceivable that a piece or group of pieces might have been traded outside the Mesoamerican area as far south as Ecuador despite the great distance involved.

But aside from the obvious dissimilarities between Cusín and the Mesoamerican specimens cited above, there are additional considerations which further weaken Jijón y Caamaño's hypothesis. Plate 27 in Raoul d'Harcourt's 1947 article describing two large collections from Esmeraldas province, just to the west of Imbabura, illustrates a large female figure (in this case from Coaque, northern Manabí; see d'Harcourt, 1948, p. 319), whose similarity to the Cusín effigy is so striking, particularly around the head, that both might easily have been the product of the same craftsman (d'Harcourt, 1947). The color of the slip of this specimen is given as *"gris general,"* with certain circumscribed areas in red; a claim that this piece is also thin orange, therefore, could hardly stand.

This is by no means the only Ecuadorian piece which could be cited as having strong affinities to that of Cusín. Gonzalez Suárez (1892), Dorsey (1901), Saville (1907-10), Uhle (1927), d'Harcourt (1947), Disselhoff (1949), Rowe (1949), and Bushnell (1951) all illustrate many examples found along the southern Colombian-Ecuadorian coastal strip, including the Isla de la Plata. A detailed specification would be unnecessarily prolix, but the following bear special mention: a large male pottery figure from Esmeraldas, also seated in a cross-legged position, hands on knees, wearing both the nose button and the bulbous headdress (d'Harcourt, 1947, Pl. 21); two somewhat cruder figures from the Isla de la Plata seated in the same manner (Dorsey, 1901, Pl. 69; cf. also a figure from Guayas: Bushnell, 1951, Pl. 2, b); human effigy pots of the same general type as Cusín from the Tumaco-Esmeraldas area (Uhle, 1927, Lam. 29; Rowe, 1951, p. 33; and examples in the Heye Museum, New York); a head from the Tumaco area (Rowe, 1951, p. 32); another head from the same area,

shown only in profile view (*ibid*, p. 34); several heads from the Isla de la Plata (Dorsey, 1901, Pls. 79 and 80); a large standing female effigy whistle from Esmeraldas (d'Harcourt, 1947, Pl. 55, 11); and a double whistle effigy head and bust from the same province (*ibid*, Pl. 47, 2).

In short, typologically the Cusín effigy does not present one important feature that cannot be at least approximately duplicated in specimens found to the west within a distance of a few hundred miles. It appears likely that the vessel was originally manufactured somewhere on the northern Manabí or Esmeraldas coast and traded up onto the highlands to the San Pablo district. Since other pottery figures of a roughly similar type have been occasionally unearthed in the surrounding north highland region, however, it is also possible that the Cusín jar may have been made locally in imitation of coastal forms. At any rate, there is no necessity for looking outside the northwestern area of Ecuador itself for the origin of this piece.

The possibility of a certain amount of Mesoamerican influence on the cultures of Ecuador, particularly the Esmeraldas manifestation, must not be discounted, although the writer feels that most of the claimed affinities are more general than is often admitted. Nor is it impossible that some Mesoamerican influence is actually reflected in the Cusín effigy (or vice versa; the finding in various parts of Mesoamerica of at least four double whistling jars resembling northern Peruvian coastal forms may be significant in this regard). But the claim that this vessel is a genuine thin orange trade piece transported by means unknown from Mesoamerica to distant Ecuador in aboriginal times cannot be accepted without more convincing proofs than those offered by Jijón y Caamaño. As suggested above, only a technological analysis of the vessel itself can conclusively resolve the problem, and it is hoped that this tentative comment will stimulate some person competent in the matter to undertake this as soon as feasible.

BIBLIOGRAPHY

Brainerd, G. W.

1941. Fine Orange Pottery in Yucatan. *Revista Mexicana de Estudios Antropológicos*, Vol. 5, pp. 163-83. Mexico.

Bushnell, G. H. S.

1951. *The Archaeology of the Santa Elena Peninsula in Southwest Ecuador*. Cambridge.

Disselhoff, H. D.

1949. Grabungen und Funde im Canton Sta. Elena (Ecuador). *El Mexico Antiguo*, Tomo 7, pp. 343-410. Mexico.

Dorsey, G. A.

1901. Archaeological Investigations on the Island of La Plata, Ecuador. *Publications of the Field Columbia Museum, Anthropological Series*, Vol. 2, No. 5. Chicago.

González Suárez, Federico

1892. *Historia General de la Republica del Ecuador; Atlas Arqueológico*. Quito.

d'Harcourt, Raoul

1947. Archéologie de la province d'Esmeraldas, Équateur. *Journal de la Société des Américanistes*, n.s., Vol. 35, pp. 61-200. Paris.

d'Harcourt, Raoul

1948. Archéologie d'Esmeraldas et de Manabi, Équateur; note complémentaire. *Journal de la Société des Américanistes*, n.s., Vol. 37, pp. 319-25.

Jijón y Caamaño, Jacinto

1949. Un Vaso "Thin Orange" del Pais Caranqui, Ecuador. *American Antiquity*, Vol. 14, pp. 226-8. Menasha.

Jijón y Caamaño, Jacinto

1951. Las civilizaciones del sur de Central América y el noroeste de Sud América. In "The Civilizations of Ancient America, *Selected Papers of the Twenty-ninth International Congress of Americanists*," pp. 164-72. The University of Chicago Press.

Kidder, A. V., Jesse D. Jennings, and E. M. Shook

1946. Excavations at Kaminaljuyú, Guatemala. *Carnegie Institution of Washington*, Publication 561. Washington.

Lothrop, S. K.

1936. Zacualpa. A study of Ancient Quiché Artifacts. *Carnegie Institution of Washington*. Publication No. 472. Washington.

1952. Metals from the Cenote of Sacrifice, Chichen Itza, Yucatan. *Memoirs of the Peabody Museum of Archaeology and Ethnology, Harvard University*, Vol. 10, No. 2. Cambridge.

Nordenskiold, Erland

1933. Origins of the Indian Civilizations in South America. In "The American Aborigines." Toronto.

Palacios, E. J.

1937. Arqueología de México. Culturas Arcaica y Tolteca. *Enciclopedia Ilustrada*, No. 4. Mexico.

Rowe, J. H.

1949. The Potter's Art of Atacames. *Archaeology*, Vol. 2, No. 1, pp. 31-4. Cambridge.

Saville, M. H.

1907-1910. The Antiquities of Manabi, Ecuador. *Contributions to South American Archaeology, The George G. Heye Expedition*, 2 Vols. New York.

Seler, Eduard

1915. Die Teotihuacan-Kultur des Hochlands von Mexico. *Gesammelte Abhandlungen zur amerikanischen Sprach-und Alterthumskunde*, Vol. 5, pp. 405-585. Berlin.

Uhle, Max

1927. Estudios Esmeraldeños. *Anales de la Universidad Central*, Tomo 39, pp. 1-61. Quito.

1933. *Estudios sobre las civilizaciones del Carchi e Imbabura*. Quito.

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March, 1952

EXCAVATIONS IN CAVE VALLEY, CHIHUAHUA, MEXICO

A PRELIMINARY NOTE*

Archaeological research in Chihuahua, Mexico, is something that has been talked about a great deal recently, but little in the way of field work has been accomplished. During the 1930's there was a spurt in archaeological activities in that area which saw a number of individuals conducting surveys and small scale

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excavations mainly in the northwestern part of the state. Reports on much of this work, and upon field work accomplished earlier, appeared in this same period. But since that time very little has been accomplished. As more knowledge of the prehistory of southern New Mexico, southeastern Arizona, and central Mexico became available, attention was focused on north central Mexico, including Chihuahua, as a key area in which might be found answers to many existing problems, especially those dealing with Southwestern-Mexican connections. In the period since World War II, J. Charles Kelley has reported upon work in southern Chihuahua in the Rio Conchos drainage, and the University of New Mexico conducted investigations in the Bolson de Mapimi in southwestern Chihuahua. The latter work, however, is unreported.

Since 1936, when I first visited Chihuahua with a University of New Mexico field party, led by Donald D. Brand, I have hoped and planned to return to the northwestern part of the state to continue archaeological work in the Sierra Madre Occidental. However, archaeological projects in other parts of Mexico, the war, and teaching loads all have combined to delay those plans.

A brief reconnaissance trip was made into Chihuahua in the summer of 1951, but rainy weather made it impossible for us to get into the area of our interest. However, during July and August of 1952, we were able to drive into northwestern Chihuahua, and to spend part of that time conducting stratigraphic excavations in Cave Valley.

The superficial features of the archaeology of Cave Valley were made known in 1902 when Carl Lumholtz published *Unknown Mexico*, a two volume work dealing with his almost five years of field researches in northwestern Mexico. Lumholtz, working with permission of the Mexican government, and under the auspices of the American Museum of Natural History, described, photographed, and excavated in many of the archaeological sites in Cave Valley. Since his time, several archaeological parties have visited Cave Valley, but no systematic excavations were undertaken. Brand and Sayles have both reported upon the area, but neither did more than make surface collections or dig small tests to determine depths of cave deposits.

Cave Valley is located in the Sierra Madres of northwestern Chihuahua, and can be reached by traveling west from Casas Grandes or Colonia Juarez into the mountains. It is about 100 miles south of Columbus, New Mexico. Since lumbering operations are no longer extensive in this area, roads are not maintained, and it is quite difficult to reach Cave Valley. Our station wagons could not negotiate the roads, so it was necessary to hire a four-wheel-drive truck in order to get into and out of the region. It required between four and five hours to drive the 45 miles from Colonia Juarez to our camping place in the valley.

The name "Cave Valley" is applied to a short stretch, about two miles in length, of the canyon of the Rio Piedras Verdes. The valley is oriented north-south, the river flowing northward. Shortly after leaving Cave Valley, the river makes a large bend to the east and flows out on to the plains to join the Rio Casas Grandes near San Diego. Elevation at Cave Valley is about 6850 feet. The country is very mountainous, with deep canyons cut by stream action. Along the stream beds are growths of cottonwood, poplar, and willow. Pine, oak, junipers, and agaves cover the mountainsides at higher elevations. At present all cultivable land in the valley is farmed by the few Mexican families who live in the small settlement called Cave Valley. Corn is the principal crop. North of the valley is the small village, Zaragoza, and Colonia Pacheco, a declining Mormon settlement, lies south of Cave Valley.

Our camp was established beside a spring in the Arroyo Casa Blanca, a tributary canyon of Cave Valley. We were able to supplement our limited food supply with staples purchased from the friendly local inhabitants. It was gratifying to discover that the authorities in Zaragoza had taken it upon themselves to protect the antiquities of the valley, and they were doing their best to prohibit the vandalizing of the archaeological remains in the caves.

We had selected the caves of the Sierra Madre Occidental for our preliminary explorations in the hope of contributing to the general problem of Southwestern-Mexican connections. It was our desire to find materials which preceded in age those of the Chihuahua, or Casas Grandes, culture which was thought to be abundantly represented in the cliff dwellings in Cave Valley. We anticipated that stratigraphic excavations in the caves containing cliff dwellings, and other evidences of occupation, might reveal earlier cultural material, represented by different pottery types, or even nonceramic horizons. We did not succeed in finding nonceramic horizons, but we were successful in finding cultural horizons considerably older than Casas Grandes. By Casas Grandes, I am referring to the Puebloid culture of northwestern Chihuahua which features: agriculture, large villages of adobe and stone, a variety of well executed monocrome and polychrome pottery wares, and a time span of 1000 to 1450 A.D.

Our excavations in Cave Valley were confined to the digging of stratigraphic trenches in six caves. These caves were located on both the west and east side of the valley. Lumholtz has described most of these sites, and he referred to those on the west side of the valley as being for habitation, and most of those on the east side as burial caves. Brand also states that most of the caves on the east side of the valley were used as burial grounds. We did not find this distinction to exist. In two of the so-called burial caves, on the east side of the valley, foundations of house walls were encountered. In Olla Cave, one of Lumholtz's habitation sites, two burials were found, and there is reason to believe that others might be present.

A total of eleven stratigraphic trenches were dug in the six caves. Dirt from the trenches was removed in six inch levels, and it was screened in order to recover all archaeological specimens present. The depth of deposits in the caves varied greatly. The deepest deposit

occurred in Swallow Cave, where one trench was excavated to a depth of five feet before encountering the cave floor. In three caves the deposits were quite shallow and our trenches were only twelve inches deep. In addition to the trenching, surface collections were made in eight additional caves, and maps were drawn of nine caves. A surface collection also was obtained from a large open site near the settlement of Cave Valley which had been partially excavated by Lumholtz and others.

Potsherds were by far the most common type of archaeological specimen recovered. One whole pottery vessel and several restorable pieces also were collected. Three burials were removed; one from a so-called burial cave and two from Olla Cave. A small collection of perishable material was secured. Stone artifacts such as projectile points and small tools, and evidences of stone working in the form of chips, were very scarce. However, metates and manos were noted in or about many of the caves examined. A few bone artifacts were recovered, but animal bones were infrequent in our test trenches.

Our first examination of the cave sites in Cave Valley failed to show a large amount of Casas Grandes pottery on the surfaces of the caves. In some sites no Cases Grandes wares were collected and in others only a few such sherds were obtained. The stratigraphic testing of the deposits in six caves confirmed this opinion. A total of 2,460 sherds was obtained. Ninety-six percent of these sherds belong to types assignable to the Mogollon culture. Paul S. Martin and John B. Rinaldo, of the Chicago Natural History Museum, have confirmed the belief that the pottery is preponderantly Mogollon, and have identified the following types as being present: Alma Plain, Alma Rough, Alma Incised, Alma Scored, San Francisco Redware, Patterned, Incised Corrugated, Indented Corrugated, Plain Corrugated, and Fillet Rim.

Only in the uppermost levels of our trenches, or on the surfaces of caves, did Casas Grandes pottery types occur. Polychrome types were very scarce. The Casas Grandes type most frequently found was Medanos Red-on-brown, a ware believed to be one of the earliest in that culture area. Madera Black-on-red, thought by Sayles to represent influence from the south, was also encountered.

For many years it has been stated and implied that Mogollon culture was responsible for the development of Casas Grandes culture, especially its pottery. It has been pointed out that many elements of the Casas Grandes pottery complex such as red-on-brown wares, polished redware, and scored and incised wares, contain elements of design, form, and treatment that might well have been derived from those characteristic of the Mogollon series. However, it has been presumed that Mogollon influence would have had to come into Chihuahua from southwestern New Mexico since Mogollon culture had not been recognized in Chihuahua.

Our preliminary findings in Cave Valley, Chihuahua, indicate that people with a Mogollon culture occupied caves in that region for a considerable length of time. In Swallow Cave, not only does the depth of deposits indicate a lengthy period of occupation, but the associations of Mogollon pottery types in successive levels of stratigraphic trenches suggest a probable occupation from some time in the Pine Lawn Phase (150 B.C.-500 A.D.) to the Reserve Phase (1000 A.D.-?). Thus, if Casas Grandes culture must look to Mogollon culture for its beginnings, it did not have to look far. Mogollon people lived in northwestern Chihuahua long before the Casas Grandes culture can be identified.

The three burials which we recovered from Cave Valley are in Mogollon tradition. Legs were tightly flexed, arms were folded over the chest; two had been placed in sitting positions, the third was lying on its right side. Orientation varied. No burial furniture was placed in the graves.

Among the perishable specimens in our collection are fragments of coiled basketry, twilled matting, cordage, textiles, cane cigarettes, arrows, trap triggers, a gourd vessel, and a wooden disc. Wads of fibre, a bone awl, and a shell bead also were recovered. Corn, beans, cucurbits, and acorns were included among the foodstuffs. Metates were normally troughed, open at one end only. One specimen had a secondary depression at the closed end, apparently a receptacle for the mano.

It is the writer's opinion that the cliff dwellings in Cave Valley can be attributed to the Mogollon culture and not to the Casas Grandes culture as is generally believed. Based on our work of last summer, it appears that the final phase of Mogollon occupation of the caves can be identified with the building of the multiroomed cliff dwellings. This belief differs with the opinions of many who have written on Chihuahua archaeology. Several workers have stated that the cliff dwellings of the Sierra Madre are remains of a late phase of Casas Grandes culture, and that most of the open sites are earlier than the cliff ruins. Our findings indicate just the opposite. The cliff dwellings, at least those in Cave Valley, seem to have been occupied before the open sites. For example, a surface collection from a large open site in Cave Valley contains a variety of typical Casas Grandes wares.

This preliminary note has been prepared to state briefly some of the results of our reconnaissance of the summer of 1952, and to list some of the opinions which have been formed as a consequence of that work. Cave Valley will be revisited this coming summer, and several other areas in that general vicinity which contain cave sites will be examined. It is anticipated that a detailed report can be written after another season in the field.

Possibly Mogollon pit house sites may be located in some of the mountain top country of the Sierra Madre Occidental, or in the basins just east of the mountains.

The existence of Mogollon culture in northwestern Chihuahua greatly strengthens the premise that Casas Grandes culture was strongly influenced by the Mogollon during its developmental stage. Also, it is hoped that the presence of Mogollon culture some 300 miles south

of its previously known area of distribution may be taking a step forward toward solving problems concerning Southwestern-Mexican connections. If we can continue to trace a culture from the Southwestern Co-tradition toward central Mexico, we may eventually reach a meeting place of cultures from the two areas.

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EVIDENCE OF A SUBSURFACE CHAMBER UNDER THE BROWN MOUND AT SPIRO.

My notes on the Brown mound (Br. 3) of the Spiro site filed at the University of Oklahoma were misplaced and therefore not available to Kenneth Orr at the time he prepared his preliminary Spiro report. (*American Antiquity*, Vol. 11, No. 4, 1946.) The following data are from a personal copy of the original notes.

When I visited the Spiro site in August 1935, members of the Pocola Mining Company were "exploring" the Brown mound. Using a team and slip, they had put one trench about 20 feet wide almost completely through the mound from the north side and a side trench from the west to the center of the mound. The clay subsoil was exposed in both trenches, less than a foot of it having been removed from the north-south trench. These trenches, with the spreading of the fill around the north, south, and west sides of the mound, had all but obliterated its original shape and size. However, the walls of the trenches offered excellent cross-sections of the mound's interior while the trench floors disclosed the partial plan of an unique subsurface chamber. Henry W. Hamilton's publication on the Spiro mound contains possibly the first published reference to a chamber in the Brown mound. Apparently he saw the mound after weathering of the trench walls had obliterated profile details.

Extending across the bottom of the side trench was an arc of burned, puddled clay about one foot wide. Shorter segments of the arc were exposed also in test pits in the main trench. Rough calculations indicated a circle about 35 feet in diameter. Noting that the material within the arc was disturbed earth, one of the men had sunk a shaft six feet square inside of the arc. At a depth of 20 feet he had encountered charcoal and what he presumed to be a burned floor. I was assured that the charcoal I saw floating on the pool of rain water in this test pit was from the floor. Evidence in the test pit indicated that the arc represented a circular subsurface chamber about 35 feet in diameter and 20 feet deep, its walls plastered with red clay about one foot thick. Profiles exposing the top of the clay plaster showed that, before the application of the plaster, the top of the wall had been undercut as shown in Figure 58. The charcoal on the floor suggested the probability that the chamber had been destroyed by fire.

The periphery of the mound was composed of a light grey, fine-textured, clayish material suggestive of loess. This material literally spilled over into the pit and was piled to a height above the top of the wall. The surface of this deposit in cross-section formed a V-shaped line, the apex at some unseen point near the center of the pit and the two arms extending outward to the present surface of the mound. The deposit was devoid of any cultural material. These several factors suggest that after the chamber had been abandoned the pit remained open a considerable length of time, during which wind-blown loess piled up against the wall of the pit building an embankment six or seven feet high.

A deposit of clean, coarse sand, uniform in thickness and composition and not exceeding half a foot in depth, lay over the inner slope of the loess deposit. The homogeneity of the sand and absence of loading and cultural material indicate a natural origin. Whether the agent of deposition was wind or water could not be determined at the time although the former seemed the more probable. No explanation could be found for the sudden appearance of the coarse sand unless it was brought up from the nearby sandy river bed during an especially severe windy season.

The core of the mound consisted of dark soil containing many lenses of clay and other evidence of loading. Lack of erosion of the sand surface indicates

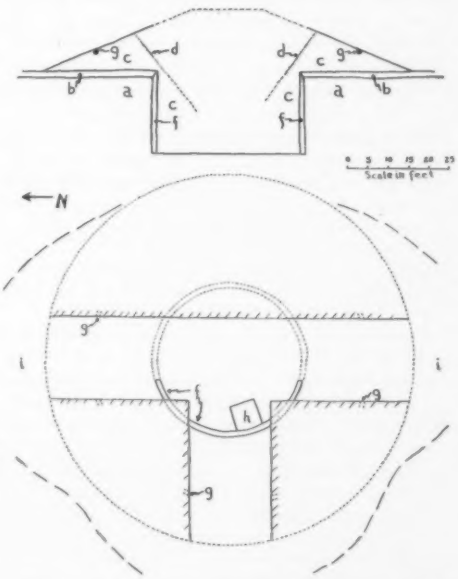

FIG. 58. Schematic representation of cross-section and ground plan of Brown Mound, Spiro site. Oklahoma. *a*, clay subsoil; *b*, top soil; *c*, loess-like light grey fill; *d*, coarse sand; *e*, dark, lenticular fill; *f*, clay wall plaster; *g*, clay feature; *h*, test pit; *i*, slip dump.

that the mound was thrown up over the partially filled chamber pit immediately after the deposition of the sand. The profiles indicated that the core of the mound was built up to where the surface of the fill conformed to the gradient of the surface of the outer edge of the loess deposit. The mound fill contained little if any cultural material.

Local informants described the undisturbed mound as a truncated pyramid. However, the evidence renders such a form unlikely. To shape a rectangular structure over the loess embankment encircling the pit, it would have been necessary to build up over that deposit in order to form the corners. The trenches through the mound were sufficiently wide to have made such a procedure evident in the wall profiles. There was no such evidence. Whatever its form, I estimated the base of the mound to have been about 90 feet in diameter plus or minus 10 feet. In consideration of the width of the trenches, the presumed flat top of the mound could not have been more than 20 feet across. On the basis of this estimate, the gradient of the undamaged slopes of the mound indicated an earthwork 12 to 15 feet high. The highest trench wall was about 9 or 10 feet high, measured from the clay subsoil floor of the trench. Forrest E. Clements' report on the Spiro mound in 1945 included a description of the mound's construction based on findings of the University of Oklahoma's excavation of the mound remnant. Having seen the mound shortly after it was opened and before the team and slip had been used, he described it as a dome about 125 feet in diameter and 18 feet high with a slope of less than 10 degrees.

There appeared approximately 12 feet from the presumed periphery of the mound a feature of red clay about one foot wide and penetrating from the present surface of the mound about one foot into the loess. Because it was uniformly present in all the profiles, it is presumed that the feature encircled the mound. The exact nature of the feature could not be determined, but it may have been the foundation of a wall or fence screening the presumed structure atop the mound.

A comparison of my cross-section with cross-sections made during Orr's excavation of the mound shows complete disparity in the concept of the building phases of the mound. Orr and I had considered the possibility that two different mounds were involved, but we are agreed that this is not likely. No record was kept of observations made at the Brown mound during my nine months at the Spiro site (in the first year of excavation by the University of Oklahoma) because the mound was scheduled for later excavation. Little more work had been done on it after my initial visit because of the court restraining order which had been applied soon after. Having left the site long before the Brown mound was excavated by Orr, I am at a loss to find a single common factor in the two cross-sections. Perhaps Orr will be able to resolve the situation and report on it in his definitive report on the Spiro site.

BIBLIOGRAPHY

Burnett, and Forrest E. Clements

1945. The Spiro Mound Collection in the Museum. *Museum of the American Indian, Heye Foundation, Contributions 14*, p. 64.

Hamilton, Henry W.

1952. The Spiro Mound. *The Missouri Archeologist*, Vol. 14, p. 27.

Orr, Kenneth

1946. The Archaeological Situation at Spiro, Oklahoma; A Preliminary Report. *American Antiquity*, Vol. 11, No. 4.

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January, 1953

NOTES ON THE SUPPOSED ASSOCIATION OF ARTIFACTS AND EXTINCT VERTEBRATES IN FLAGLER COUNTY, FLORIDA

J. H. Connery (1932, p. 516) reported a supposed association of artifacts and extinct vertebrates at the Bon Terra Farm, in Flagler County, Florida. It was stated that an arrowhead was found beneath the jawbone of a mammoth elephant. The arrowhead was not described or illustrated. E. B. Howard (1940, p. 309), who tested the site, thought the association questionable, but did not elaborate on his reasons for so thinking. Recently, through the cooperation of Connery, I reexamined the Bon Terra site (Fl 5) and the material found there.

A drawing of the arrowhead was made, the outline being traced and the chipping indicated by freehand sketch. The artifact is small, thin, and flat; it was ovate before notching. The diagonal notches resulted in a barbed projectile point with a wide tang. The edges bear fine pressure retouching. The tip had once been broken and the artifact then reworked into what would usually be called a stemmed scraper. This type of point is unlike anything attributed to the paleo-Indian, and has not been reported from the Archaic of Florida.

Near the elephant remains, and about at the same level, Connery found one entire and several fragmentary awl-like implements of polished bone. As these artifacts are transversely scored and striated at one end, they probably were hafted projectile points rather than awls. They are not beveled like the ivory points described from Florida by Jenks and Simpson (1941, p. 314). Bone points are known from the preceramic Archaic of northeastern Florida (Goggin, 1952, p. 118), but they persisted for such a long while thereafter that they cannot serve as a reliable time-marker.

In Connery's possession were a ground sloth phalanx, sloth coprolites, garfish scales, and fragments of an armadillo carapace, all of which had been found in one small pit along with the artifacts and elephant bones. Other animal remains had been left at the Bon Terra Farm. A log had been found beneath the elephant jawbone; fragments of this log were browned as though by slow oxidation but still retained a woody structure.

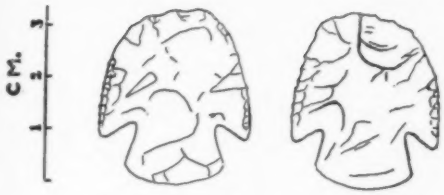

FIG. 59. Arrowhead associated with jawbone of a mammoth at Bon Terra Farm, Flagler Co., Florida. After the original tip was broken, it was reworked to form a stemmed scraper.

At the farm it was learned that the more interesting fossils had been rented to novelty shops as a tourist attraction. All that remained was a washtub full of broken and largely unidentifiable fragments. These scraps seemed to vary in the degree of mineralization. At a nearby novelty shop I examined the lower jaw of a mastodon, said to be from the farm. At another shop some of the Bon Terra material had been mixed with fossils and artifacts from other localities. The remains of tapir, camel, peccary, Columbian elephant, mastodon, and possibly sabertooth were on display and were said to have come from the Bon Terra site. This assemblage is typical of the so-called Melbourne bone bed, and is generally thought to be of Pleistocene age.

According to local residents, the site had been under water until about 30 years ago, when the straightening of the Intracoastal Waterway altered the drainage pattern of the area and exposed some land which was subsequently farmed.

John W. Griffin stated that he had visited the farm at the time of E. B. Howard's excavations there. Howard found the fragments of a single mastodon tooth scattered over a wide area, and concluded that there had been some disturbance at the site.

Available evidence suggests that the Bon Terra association of artifacts and extinct vertebrates was purely a fortuitous one.

I am indebted to Mr. Connery for his co-operation, and to Mr. Griffin for helpful advice.

BIBLIOGRAPHY

CONNERY, J. H.

1932. Recent Find of Mammoth Remains in the Quaternary of Florida Together With Arrowhead. *Science*, Vol. 75, p. 516. New York.

GOGGIN, JOHN M.

1952. Space and Time Perspective in Northern St. Johns Archeology, Florida. *Yale University Publications in Anthropology*, No. 47. New Haven.

HOWARD, E. B.

1940. Studies Bearing Upon the Problem of Early Man in Florida. *Carnegie Institution of Washington, Yearbook*, Vol. 39, pp. 309-12. Washington.

JENKS, A. E. AND MRS. H. H. SIMPSON, SR.

1941. Beveled Artifacts in Florida of the Same Type as Artifacts found Near Clovis, New Mexico. *American Antiquity*, Vol. 6, No. 4, pp. 314-19. Menasha.

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RE ARCHAEOLOGY OF THE GALAPAGOS ISLANDS

I am indebted to my former Galapagos colleague, Mr. Joseph R. Slevin, Curator of Herpetology, California Academy of Sciences, San Francisco, for the following data which may have some pertinence in the moot problem of Amerindian archaeology in the Galapagos Islands. Mr. Slevin, recently in London, excerpted portions of the original logs and diaries of early voyagers to the Galapagos for his book on that group.

From the log book of the Ship Rattler, Captain James Colnett, R. N., April 26, 1794, referring to James Island: "At several places he [the chief mate] stopped found numbers of jars, old iron, and a decayed dagger and several other articles decayed with time and which we still conjecture was left here by the buccaneers." The whaling master of the Rattler also found broken pieces of jars.

Apropos of buccaneers leaving supplies are the following quotations from the diaries of buccaneer Captains Davies and Ambrose Cowley. They visited the Galapagos in 1684 with a fleet of five ships:

"The iland is likewise a barren rocky iland like the former but noe water only in ponds which retains it in the wett season ans — keeps all the year.

"Wee stayed there twelve dayes and gott a shoare about 9000 sacks of flower and piled them againe and ....." From diary of Captain Ambrose Cowley, May, 1684. This probably refers to James Island, which they apparently visited before proceeding to Albemarle Island.

Referring to Albemarle Island: "I lett go an anchor in good ground, wee being then five shipps in company, three of them allmost loaded with provision and flower, sweete meates and sugar, we seeking a place to putt these provisions on shoare against a time of scarcity, this end being the worst part of the island, yet it affordeth provision in abundance, as fish turtle iguananas and fowles in abundance." From diary of Captain Davies, June, 1684.

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BOOK REVIEWS

Archeology of Eastern United States. Edited by JAMES B. GRIFFIN. University of Chicago Press, Chicago. x + 392 pp. 205 figs. $10.00.

Foreword

This comprehensive collection of summaries of the archaeology of the eastern United States, published in honor of Dr. Fay-Cooper Cole by his former students, will undoubtedly stand as the definitive handbook on Eastern archaeology for a number of years.

The introductory articles of the volume are a history of archaeology in the East by Carl E. Guthe, an outline of the physical anthropology by Georg K. Neumann, and a discussion by Fred R. Eggan of the relation between the historic cultures and their archaeological backgrounds. The major portion of the publication consists of 22 articles summarizing the prehistories of various portions of the East, and a summary of the entire region by Griffin. These are profusely illustrated by 205 figures arranged at the end of the book. Discussions of historic sites archaeology by Jean C. Harrington, of dendrochronology in the Mississippi Valley by Robert E. Bell, and an appendix discussing radiocarbon dates in the East by Griffin complete this contribution.

The importance of this volume seems to justify more than the usual casual review. Hence the several articles are here reviewed by qualified specialists. For the most part the reviews do not emphasize reporting of the contents of articles; rather they utilize the review space for a critique of the contents and to supply pertinent information that may not have been available when the original articles were written. In this way it is hoped that the reviews may be of more use to those who will use "Archeology of the Eastern United States."

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Archeology and Race in the American Indian. GEORG K. NEUMANN.

Assuming continuous population pressure in a pool of peoples in eastern Asiatic taiga and steppe, several migration routes out, and slowly shifting conditions of life during and after the last glacial retreat, Neumann has at hand isolation and/or selection with inbreeding, and mixture with consequent recombination of genes, as mechanisms for the formation and maintenance of racial varieties among migrants into the New World. He defines a variety as a "zoölogical group of a certain order of differentiation characterized by the possession of a combination of a selected number of inherited morphological attributes," falling somewhere between a "local strain" and a subspecies (= race ?), 30-80% of whose members are identifiable as of that variety. Neumann points out the impossibility of using gene frequency analyses but stresses the lack of any fixed limit to the number of varieties, the dynamic fluctuations in speed of change, and the lack of any arbitrary preconceptions in identifying the varieties, all of which have been noted as geographic variants by earlier investigators. Yet since the eight human varieties found in America north of Mexico are based on only 471 undeformed male skulls out of 10,000 of all sexes and ages available and on one exemplifying site sample from each group of "stabilized nuclear communities" (avoiding mixed populations of cultural centers) there is a considerable subjective selecting process: the series used are "types" in terms of peoples rather than individuals and are chosen logically to express extreme and homogeneous population variants.

Otamids, or "Upper Palaeolithic" linear-built, rugged populations are seen as the first migrants and traced to a peripheral distribution from Texas Karankawa, Pima-Papago, and Pericues to Black Sand and Red Paint peoples, Hopewell, and early Woodland. Neumann's second migrants, plausibly linked with Folsom-Yuma cultural spreads, are his smaller-faced, less rugged, linear Iswanid-Ashiwid couplet (Hokan-Siouan?) splitting to form the Archaic shell-midden gatherers of eastern rivers (Siouan?) and the basic (Keres?) populations of the Southwest including Basketmakers and early Pueblo peoples. The short- and high-headed, broad-faced Walcolids (Muskogean and Uto-Aztecan?) in "shatter-pattern distribution" from the north Pacific coast to central California, middle Mississippi Valley and Southeast and the relatively linear, high-headed, and long-faced Lenapids (Algonkian and Wakashan?) spreading later eastwards with cord-marked pottery (?) into the northeastern Woodlands are given less certain places in a migration sequence or local formation, though Neumann hints Lenapid links with Ipiutak and pre-Aleut groups.

The highly distinctive Inuids (central and eastern Eskimo, cf. Chuckchee) and brachycrane, byrsoid, flat-based, high-nosed and wide-faced Deneids (Athabaskan, Salishan, Penutian?) ranging from the Aleutians and Mackenzie and Plateau areas via Northwest coast isolates to Hupa and Apache form the last two groups of migrants. Finally the Lakotid variety (taking over Siouan, Algonkian and Caddoan) with extremely platybasic, byrsoid, but mesocrane vault, rugged face, and huge eagle nose is explained as a Lenapid-Deneid-Walcolid hybrid in the Plains area as the end step in a chronological sequence of hunting populations starting with Otamids and running through all varieties except Inuids! The author wisely refrains from working out in terms of these types all tribal origins and mixtures in places of key cultural synthesis. In the small space available he simply stresses the plastic nature of populations and lack of absolute stability in refuge areas as well as cultural centers.

Neumann's total picture, inadequately sketched above, represents a progressing life work using the taxo-

nomist's primarily subjective approach which is unfashionable at present. Hence the work deserves careful evaluation. At least five criticisms will be leveled, and perhaps hurled, by Neumann's colleagues: (1) the varieties are virtually used as types selected with inadequate sampling and hence unreal and subjective descriptive tools to be replaced first by full population clines of a few traits and measures traced in space and time, and eventually by gene frequencies; (2) the author has taken almost no account of stature and body build or of non-bony features even where these may have importance to archaeologists; (3) the handling of population dynamics is too simplified, omitting mutation, other genetic mechanisms, and discussion of the key importance of size of breeding population in its interaction with selection, mutation, isolation, to produce microevolutionary change; (4) ecological interrelations of climate, diet, and cultural factors like clothing and house-type with both direct and selective effects on growth and build are omitted; and (5) displacement of familiar "type" names by a new and literally barbarous (linguistically Indian) set of labels will be resisted.

All except the last criticism are valid in some degree. Although lack of adequate space and of much data restricted full handling of ecology, racial dynamics, and body form, the scope of the study demands more. Climatic selection is not dealt with despite recent speculations on it elsewhere; the effects on population size of change from hunting to food-producing economies is not specifically used; nor is population variability in relation to isolation and mixture handled by more than useful hints, though Stewart long ago showed American Indian series (except mixed ones like Pecos) to be far less variable than European or Near Eastern ones.

Without deep consideration of population dynamics beyond the data yet available for pre-Columbian America, no one could analyze race change by gene or even trait frequencies. Hence Neumann's use of local varieties as types is inevitable. Since he takes careful account of known material on distributions, datings, and migrations his resulting picture is realistically dynamic as seen in terms of stable concepts—the 8 varieties. Here Neumann has avoided the danger that the types will replace the realities, the many shifting populations sampled by the truly colossal number of skulls (10,000) which he has examined. Other workers, particularly armchair interpreters, must be cautioned not to force diverse skull series into one or other category. When future re-analysis of all these and further data by objective frequency methods is completed this reviewer suspects that the results may well have to be clarified by a similar use of these same types. Neumann may well be right in both total picture and most details. Certainly this is the most factually exhaustive, daring, and stimulating study of North American racial change to appear since Hooton's *Indians of Pecos*.

This reviewer has two personal criticisms not of the author but of the policies which permit handling just a chapter on "race" rather than on "physical anthropology." First, the whole field of social biology has to be omitted: life expectancies, percents of deaths in infancy and later ages, sex ratio if obtainable, population size change, frequencies of dental disease, arthritis, and other pathologies, fractures and surgical procedures, osteoporosis and stature changes related to diet, etc. are all primary data which few have yet handled for North America. Second, the standard of comparison is not clear: the striking divergence from European norms is assumed rather than stressed, so that illustrations of individuals show no more apparent total difference between Lakotid, Deneid, or Lenapid varieties than occurs generally within one family in our modern and recently panmictic white population—the group of traits distinguishing all Indians is hardly separated from those distinguishing the subtypes. These are points which perhaps demand handling in a full-length book or monograph.

The unavoidable limitations of space (20 pages) and of subject (Eastern U.S. Archaeology) in a volume already fat for the money are equally responsible for these omissions in Neumann's approach. Within the above limits he has so cogently outlined, on a truly vast scale and with unhurried care, precise interconnections between skull forms, sites, strata, and languages that his reconstructions provide the springboards for all new efforts in this particular area of cooperation between archaeologists and physical anthropologists.

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The Archeology of the Northeastern United States. Richard S. MacNeish

MacNeish's "synthesis of the aboriginal history of the Northeast from earliest prehistoric times until the contact period," utilizes an areal subdivision into four major regions, viz.," (1) central and northern New York, (2) the Hudson River Valley of New York, northern New Jersey, and coastal New York and Connecticut, (3) Rhode Island and eastern Massachusetts, (4) coastal New Hampshire and Maine," on the basis of natural geographical factors and the distribution of native cultures at the historic level (p. 46). By combining his numbers 2 and 3, a general conformity results with Kroeber's classic attempt. Actually, in MacNeish's first subdivision, "central and northern New York," he has also included the western and southern parts of the state, in fact everything but the extreme eastern and southeastern sections, and it would perhaps have been more accurate to have employed the designation interior New York, as opposed to coastal and tidewater New York (included in his second subdivision), since the tidal head extends as far up the Hudson River as Cohoes.

Considering the unequal regional development of archaeological investigation within this large area, the widely scattered major collections, and the dearth of publications for some whole sections, MacNeish has performed a very creditable evaluation. Moreover, his article is one of the best illustrated in the Cole volume, thanks to the skill and patience of his wife, June MacNeish.

The author has remarked (p. 46) on the large measure of fundamental agreement which existed between himself and this reviewer, following long discussions at Rochester, and it should be obvious that serious strictures in the present instance will be few and far between. However, perfect unanimity is only for the angels and, moreover, the nonstatic condition of research in this area has necessarily resulted in some revision of opinion since 1949, the date of submittal of the manuscript. Thus it is at present possible to offer somewhat more substantial evidence for a paleo-Indian horizon in the Northeast (p. 47), on the basis of the Shoop site in southeastern Pennsylvania (see article by Witthoft in *Proceedings of the American Philosophical Society*, Vol. 96, No. 4, pp. 464-95, 1952) and the Reagen site in northwestern Vermont (article by Ritchie in *American Antiquity*, Vol. 18, No. 3, pp. 249-58, 1953).

MacNeish's mild misgivings concerning a phase of the reviewer's interpretation of the Frontenac focus (p. 47) can probably be dispelled by the reflection (or better still, reperusal of the site report, particularly pp. 23-27) that neither the culture nor the population involved in this remarkable site was conceived of as a simple replacement of Lamoka by Laurentian elements. Nor is a mechanical admixture of the cultural traits of the two groups concerned alone sufficient to explain the observed phenomena. Clear evidence of creative reactions are discernible in a number of the artifact forms (e.g., the bone whistles, p. 21) as the probable result of cultural upgrading due to contact metamorphosis. With the indicated passage of time wider outside connections are suggested by the novel elements (e.g., the marine shell ornaments) and a small inventory suggestive of early Woodland beginnings (pp. 22, 92).

It would seem helpful also to point out, with respect to MacNeish's statement (p. 48) regarding the possible derivation of the Lamoka people and their culture in New York from the early Kentucky shellmound groups, first, that radiocarbon dating at present affords an equal antiquity for the two widely separated entities and, secondly, that, despite a considerable degree of cultural symmetry, such distinctive shellmound markers as the grooved axe and bannerstone are not present in the Lamoka focus. I, therefore, incline to the opinion of a common, as opposed to a direct derivation.

Since MacNeish wrote (p. 48) some additional evidence has appeared both in New York and Pennsylvania for an Archaic to early Woodland Transitional period following the Archaic. The New York evidence is embodied in my new Piffard focus (*American Antiquity*, Vol. 17, No. 2, 1951, p. 132) and Witthoft will soon publish his data for Pennsylvania.

I should also like to direct attention to the author's confusing statement (p. 48) that the earliest known Northeastern pottery, which I have called Vinette 1, is identical with Fayette Thick in Ohio and Kentucky. Actually there is considerable difference in the forms of the vessels, no indication of flat bottoms, lugs, or tetropodal supports being recorded for Vinette 1 pots. Nevertheless, cultural and temporal interlinkages are doubtless indicated by the shared traits.

While the relationships and cultural continuity within the various entities of the Woodland period, as stressed by the author (pp. 49-50), are in most respects matters of no dispute (indeed, the sequence from Point Peninsula 3 to early Owasco has been eased and partially bridged by the newly differentiated Point Peninsula 4 focus [see last cited article in *American Antiquity*]), MacNeish's remark, "Thus the proto-Iroquois may have entered New York bearing a Point Peninsula 1 culture in Early Woodland time" (p. 49), seems to this reviewer to press too hard for a favored hypothesis. The term "Iroquois" has linguistic connotations and actually a somewhat better case could be developed from the same evidence for the assumption that at or about this time (specifically the Point Peninsula 2 focus, which seems to have its roots in Ontario), Algonkian-speaking groups made their appearance in New York, inasmuch as an Owasco development into Munsee is as clearly demonstrated as Owasco-Iroquois connections (see Ritchie, 1949a in bibliography of Cole volume, pp. 188-196; cf. 1949b, pp. 22-24, 45-49).

In this paper MacNeish is concerned almost wholly with cultural manifestations on a focal level, referring only rarely to the broader taxonomic categories. This preoccupation with the smaller units, often referred to by him as "complexes," results in some measure of confusion in his efforts to relate foci (see, e.g., the section captioned "Rhode Island and Eastern Massachusetts Subarea, Archaic," pp. 56-57). The need for unification finally expresses itself in his inference reached at the end of the section, where he states: "Generally speaking, the Grassy Island complexes appear to be related to the Laurentian of central New York." Eastern New York would have been a better area for comparison, for the closest parallels occur in the Laurentian of the Hudson Valley.

Having provisionally attributed certain eastern Massachusetts cultures to the Laurentian Phase (p. 57), as just mentioned, the reader cannot escape the conviction that the author fell unduly under the spell of New England conservatism when, on the following page, in dealing with the cultural position of the Red Paint complex, he feels obliged to state: "Exactly where this complex is derived from is at present unknown, though it appears to be *very tenuously related to the so-called Laurentian Phase of New York*," (italics mine). And this despite the fact that the majority of the deterministic traits he has just enumerated constitute the now widely recognized markers for the Laurentian.

Finally, in appraising the late Woodland manifestation of the same region (Maine coast) he commits one of the few factual errors which somewhat mar this excellent report. In this case the implications are serious, for he assigns "bannerstones" to the upper horizons of shells and fire (not fine) dirt of the Taft's Point shell mound, thus implying the persistence of this trait far beyond its actual temporal limit in the Northeast. A single "wing" fragment similar to the "whale tail ornaments" of the Red Paint culture, was found in this site, but under the lowest horizon which produced characteristic Red Paint elements (See Hadlock, 1939 reference in bibliography of Cole volume, p. 18). Also there is no mention in Hadlock of the triangular arrowpoints cited in support of the late Woodland age of the upper levels. Only notched arrowpoints are listed, together with a small percentage of triangular knives, both of which occurred at all levels in the site. (Hadlock, *op. cit.*, pp. 10, 11, 25.)

Since it is assumed that students will make much use of this volume it seems desirable to correct another error, possibly of editorial origin, which occurs on page 49 (5th line) where the word "former" should be substituted for the word "latter," since the reference is obviously to the Point Peninsula 1 focus.

In conclusion, in this reviewer's opinion, MacNeish's paper constitutes a distinct contribution to the literature of Northeastern archaeology.

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Archeological Chronology of the Middle Atlantic States. KARL SCHMITT.

Schmitt's essay, submitted to the editor in 1947, was the pioneer attempt to order archaeological cultures of this area in a chronological scheme that was not simplistic. Earlier interpretations of the region were almost invariably naive and preposterous (as C. C. Abbott's theses), or biased against any significant chronological or developmental distinctions. Although the intellectual revolution in local archaeology of this region has been so recent, it has been so sweeping that those of us who work here almost ignore the older ideas and older data, and are now quite oblivious to concepts current eight years ago. This article, widely distributed in manuscript, was an important force in that shift, and had a significance that I cannot seem now to find in the printed copy. The role which this paper played in the development of a new archaeology in the area is now ancient history, and its publication is an anti-climax. Not that there is anything wrong with Schmitt's essay; on the contrary, it is a paper that should have appeared in the periodical literature of 1948. Eastern Woodlands archaeology is still too ridden with monograph and symposium ambitions, whereas the précis style, compact objectivity, and quick publication of a periodical literature are best suited to progress and the dissemination of information. The most disappointing publications in American archaeology are apt to be summary volumes and other pretentious media, and I wish that Schmitt's essay had not been reserved for a handbook (in the best German sense, a book which must be carried in the hand and could not possibly fit in a pocket, gown-sleeve, or briefcase).

Schmitt's article is buried in an unreadable book (it must be, to the layman, as unreadable as Martin, Quimby, and Collier's *Indians before Columbus*, since I find most of it quite so, although an important source of data about individual and areal interpretations) and is itself scarcely readable, since it deals with classificatory devices. Therefore I must recommend it as a paper to read along with some earlier local work, perhaps C. A. Weslager's *Delaware's Buried Past*, which is eminently readable but of little worth. Schmitt's scheme is an intuitive application of the Midwestern Taxonomic System hung on a chronological sequence which has been called Midwestern, but which is unrelated and which was widespread in laboratory parlance before it appeared in publications (I now have no idea where or with whom it originated). It involves four stages; Archaic, early Woodland, middle Woodland, and late Woodland. Each stage includes components and generally foci. In almost every case, these are composite sites rather than clear-cut complexes, and Schmitt certainly suggests that this is the case. Particularly objectionable is the manner of naming some assemblages; two foci are named after archaeologists who discribed type sites (Cyrus Thomas and Robert Jones), and two are named after Indian tribal groups (Susquehanna and Minisink).

The central part of the essay, titled "Discussion of Spatial and Chronological Relationships," is the most important part of the paper, and discussion of New Jersey and Pennsylvania sites the least valuable, in terms of the ideas of 1953. My statements here are based on recent extensions of knowledge, and are not intended as strictures on Schmitt's paper of 1947. Our ideas of that time involved critical attacks on earlier concepts, and Schmitt emphasized these; the data now available are a measure of the success of this assault. New ideas have come from other sites, not from study of the literature, so that Schmitt's reanalysis of the New Jersey reports is as faulty as any similar re-examination that might be done today.

Apart from reaffirming and reinforcing Schmitt's belief that most of the reports he analyzed were based on highly composite, tremendously mixed sites and that interpreters had overlooked the most significant differences (for example, p. 64, he suggests the necessity of interpreting Monongahela Woodland in both areal and chronological subdivisions rather than as a unit), I should perhaps list some alternative interpretations to some of Schmitt's ideas. On p. 60 and later pages, Schmitt lists steatite-tempered pottery in early Woodland contexts, so that his early Woodland is equivalent to my Transitional period, and my early Woodland is equivalent to Adena and to an unsorted part of

Schmitt's middle Woodland. The cemetery at Cambridge, Maryland (p. 62), with abundant Adena trade objects, is therefore not equivalent to sites on the Hopewell time level; both are listed as middle Woodland. The Thomas focus (Hopewellian of the Allegheny Valley) is separated from Hopewellian of the Pittsburgh area, whereas both are peripheral Ohio Hopewell, and are closest to the Hopewell of northern Ohio, with projectile points and pottery of local ancestry but mixed with Scioto Valley Hopewell trade objects in tiny mounds. The copper-sheathed bear canine from the McKee's Rock mound is actually a wooden form sheathed in copper sheeting and wrapped in fabric (p. 62). The so-called Jones focus (the Clempson's Island Culture), ascribed to middle Woodland (p. 61), is the proto-Owascoid horizon of the total Susquehanna Valley, and is the earliest stage of late Woodland, probably equivalent to transitions between latest Point Peninsula and earliest Owasco in New York. The Clempson's Island pottery (a flint-tempered, fabric-marked, bossed ware) is described separately, and not mentioned in connection with the Jones focus (p. 62), as another middle Woodland manifestation. It is closely related to some pottery of the Clover Creek focus (p. 62), and it is chronologically equivalent to Page Cordmarked pottery (p. 62), ascribed to late Woodland times, and, inferentially, to the Gala focus of Virginia. The important distinction between Page and Shepard Cordmarked, probably of first-rate chronological significance, is lost. The rimmed pottery of "Monongahela Woodland," which Schmitt suggests is earliest in Monongahela Woodland, is actually almost identical with Page Cordmarked; it is hardly related to the shell and grit tempered Monongahela wares, and must be centuries earlier. "Iroquois trade-sherds" of Monongahela Woodland (p. 69) have not so far been found; these are incised Fort Ancient sherds. Likewise, the "Andaste" pottery from two West Branch Susquehanna sites (p. 69) was misidentified in the original reports, and is not Iroquoian. However, all of my criticisms here go back to imperfections in the literature which Schmitt analyzed, and most are extensions of suspicions which he voiced. Essentially, this applies to most summaries of this type; the original literature is unreliable, and one must go back to the relics and sites for valid data. Since Schmitt was unable to do this for most of the region, he could only attempt a criticism of the available information, and try to derive a rough chronology from it. His effort was in the right direction; it was of tremendous significance a few years ago, and it has a great deal of validity, but it is inadequate and not inclusive enough. It deals with material which must be re-examined in its entirety, and it involves a nomenclature (an application of Midwestern Taxonomic System terminology) which is worthless and should not gain any currency.

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Sixty Years of Ontario Archeology. KENNETH E. KIDD; *The Archeology of the Upper Great Lakes Area.* GEORGE I. QUIMBY.

These two papers are a fairly comprehensive covering of the shores and hinterlands of all the Great Lakes except Ontario, and excepting northeastern Minnesota which is taken up elsewhere in this book. The main difference in method between Quimby and Kidd is the close adherence by the former to the current taxonomic terms. For the Iroquois sites of southern Ontario, upon which most of the work of the past 60 years has been concentrated, Kidd presents the raw data with an allocation of chronological relationships and artifact similarities. Both methods have their virtues and vicissitudes. The one is systematic and digested, but is likely in part to become obsolete as research proceeds. The other describes completed results in terms of the main blocks of traits, and the account is of the nature of source material.

Quimby begins by saying that the Upper Great Lakes is not a cultural (sic) area. I would say that it could be very easily treated as such for a certain part of the period of its prehistory. Certain cultural uniformities arose out of the very distinctive features of this environment: The main source of copper in North America, a pleasant and efficient means of transportation, and birch bark for diffusion by canoe. One of the earliest manifestations is the Old Copper industry, and the birch bark canoe is a regional adaptation of considerable significance. If one were to look for an assemblage of material traits corresponding to the Great Lakes and their environmental facilities, he could find it in the Point Peninsula, with its diagnostic elements scattered around from Minnesota to the St. Lawrence River. Along with the Old Copper and Hopewellian this was the beginning of a North American chalcolithic, but the diet of pure copper in nugget form was too rich. They never found out it could be cast because they did not have to smelt it from the ores, and tin ores being absent in the region it would not have become a bronze age. I could believe Adena to be post-Hopewellian on the basis of its sparing, and chiefly ornamental use of copper, suggesting that it was no longer easily gathered from the surface.

Minor criticisms of Quimby's account are his omission of the "argillite culture," which has the appearance both in Michigan and New York, of considerable antiquity; and his failure to cite the chief publication on the Glacial Kame culture by Cunningham. He is correct, I believe, in placing the Michigan inclosures and their associated burial mounds in middle Woodland, though I would not call them geometric inclosures as he does on page 103. None of the papers dealing with the northern Middle West interprets specifically the emergence of large fortified sites in the middle Woodland, and lasting on down to historic times. Perhaps taxonomic unity and continuity does not reflect political unity, except for the Iroquois, or maybe the builders of these various types of hill-top forts were in each suc-

cessive stage protecting themselves from the aborigines. Quimby's allocation of the Iroquois to the northern part of the upper Lakes is supported by my work in the Manitoulin District of Ontario, where two more have been found, both pre-Columbian.

The two authors were at a disadvantage in reporting the work at Killarney. This is still going on, and I have made a retreat from some of the conclusions in my earlier papers. It is a good thing to have been able to carry on the work for so long a period, as sampling by two or three season's work would have been like sampling Sears Roebuck & Co. At George Lake about 98% of the artifacts are, I believe, in an unfinished condition. Only two specimens indicate projectile point types, a Yuma point and a side-notched type. Recently two good Sandia I types have been found in the gravels under heavy boulders at Chickanising Creek, and they raise the question whether the semi-lunar blades at George Lake are really such, or unfinished Sandia points. Neither paper uses radiocarbon dates, though the editor has a footnote to Quimby's discussion of George Lake about the chronological catastrophe at Two Creeks, Wisconsin, which cuts the age of George Lake by about two-thirds, giving perhaps 4000 years for the Yuma point there, and 5000 years for MacNeish's Plainview site on a beach of Lake Algonquin at the west end of Lake Superior. It also compresses into about 11,000 years the six stages of Great Lakes from Lake Whittlesey to and including Nipissing Great Lakes and down to the present, and the cutting of the entire gorge of Niagara River.

Kidd does not discuss Killarney Bay in detail, and Quimby assigns it to early Woodland. It really has three components: Laurentian, as evidenced by one ground slate point on a terrace above the main part of the site; Middlesex in the beach gravels, deposited by wave-action; and the superincumbent top soil component, a Point Peninsula village site with a burial mound. There are Point Peninsula II sherds and the mound shows rather strong connections with the Old Copper industry in such things as long-chisel-like copper axes, copper spindles or picks with rectangular cross-section, and beaver-skin wrappings for copper axes. One small turkey-tail point suggests early Woodland. The most Hopewellian traits are large finely-retouched spear-points and coarse cache-blades, but the latter, over a hundred, are stained with red ocher. Point Peninsula is indicated mainly by the pottery, Ritchie and MacNeish's Wickham Corded, Point Peninsula Plain, Point Peninsula Corded and St. Lawrence Pseudo Scallop Shell. There is no Vinette I on the site so far.

Kidd mentions the similarities between the Lawson site and the Younge site in Michigan, and Clearville in Kent County, Ontario, dug by Wilfred Jury is also related. The whole southeastern part of the lower peninsula of Michigan appears to me to have an extension of the province of Ontario in late pre-Columbian times. This Michigan "Owasco" is present at sites not yet well know, notably at Riviere au Vase just north of Mount Clemens, the Tessmer site near Rochester, in the upper levels of the Gibraltar site, and at other points south of Detroit along the River and the Lake Erie shore. From conversation with Wilfred Jury I believe the Clearville and Younge sites are closely related.

Both papers were written too early to include the large site at Sheguiandah, on Manitoulin Island, discovered in 1951 and worked in 1952 by Thomas Lee of the National Museum of Canada. It is apparently another George Lake, and only 25 miles distant. The Brohm site, dug by MacNeish, at the west end of Lake Superior, and Old Birch Island cemetery near Killarney, were omitted for the same reason. Neither author makes any mention of the post-glacial upwarping that accounts for the elevations of the raised beach sites. This is purely a matter of geology but it will in the future have a close bearing on the archaeology of all sites within the uplifted area, and the dating of these sites by radiocarbon may affect the geological interpretations. The beginning has just been made. There are probably a good many sites that are connected with post-glacial water-planes in one way or another.

To round out the picture completely other items come to mind. There are petroglyphs at the west end of Lake Erie, in the Thumb of Michigan and on the Ontario shore of Lake Superior, and rock paintings near Escanaba in the upper peninsula; inclosures on the Ontario side of Detroit River and Hopewellian on the south shore of Lake Erie near Sandusky. A. G. Smith of Norwalk, Ohio, reports Sandia 2 points from the surface in northern Ohio.

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(The review of *Outline of Cultures in the Ohio Region*. RICHARD G. MORGAN, to be prepared by Raymond S. Baby was not received by press time.)

The Prehistory of the Northern Mississippi Valley. JOHN W. BENNETT

Here is an exceedingly well written summary of the accumulated knowledge pertaining to the prehistory of the area encompassing Wisconsin, Minnesota, the northwestern section of Illinois, northern Iowa, and border regions in the Dakotas and Canada. The Archaic, Woodland, Hopewellian and Mississippi cultures are competently described.

The only question that might be raised is in the interpretive realm where certain affiliative and developmental problems are treated as fact rather than hypothesis. For example, "the emergence, blending, and disappearance of Hopewellian manifestations from and *in* the generalized middle Woodland cultures" (p. 108) is incipiently stated as a problem but treated as a fact

throughout the article. This Woodland concept of Hopewellian is an interesting hypothesis, but the argument has been based solely on pottery rather than total cultural comparisons. This concept may be useful and accurate for certain areas, particularly Illinois, but to project a local dynamic into a generalized one can be dangerous, and in this case seems to rest on rather weak evidence. It seems more logical to this reviewer to regard Hopewellian as a distinctive culture unaffiliated with Woodland in its earlier stages, but one which did ultimately merge with Woodland in certain areas (Illinois), merged with Copena in other areas (Alabama), and was influenced but not encapsulated by Woodland in other areas (Wisconsin). At the moment this reviewer tends to regard the Woodland concept of Hopewellian with "open-minded suspicion."

A second problem treated as fact is the division of Woodland into the time categories of early, middle, and late with the allocating of all known Woodland manifestations into one or another of these time periods. This is a useful and necessary attempt, but its end result has been a too "pat" picture of the Northern Mississippi Valley in view of the weak supporting evidence. The stratigraphic evidence for assigning all Woodland manifestations to specific time categories is in most instances lacking, the exceptions being the data supplied by protohistoric sites for the Late period, as in Clam River focus, for example.

In lieu of stratigraphic evidence for this area, cross-tie data i.e. stratigraphic sequences from neighboring areas have been employed, and with some direct benefit. However, the applying of certain typological sequences from one area to another has too often been used wholesale. In terms of pottery, for example, the over-reliance on a thick-early, thin-late typology has led to oversimplification and has yet to be demonstrated by recurring stratigraphy. The assigning of all crude, thick, undecorated pottery to the early category may be permissible in some areas, but to expand local significances into wide areal significances in the Northern Mississippi Valley is not warranted by the available data. This simple-to-complex typological thinking too often ignores the converse cultural dynamic—that of degeneration. In the area under discussion there is some evidence (if one allows oneself to get out of the field of pottery) suggesting that such process from complex to simple has occurred. Bennett points up two such examples: in the field of polished stone and copper (p. 111), but pottery is treated as being immune to such happenings.

This review has been perhaps too negative and too conservative. However, the positive contribution of this article speaks for itself, and science is necessarily conservative.

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The Northern Plains. William Mulloy.

This paper reviews briefly the archaeology of the region north of the Niobrara-Upper Platte River valleys between Minnesota and the Rocky Mountains. For part of this great area, like the Upper Missouri, and for certain aspects of its prehistory, such as early man, previous summaries by other workers are available, and Mulloy has drawn freely from these. In addition, he discusses some of the results and implications of original investigations—details still largely unpublished and not generally available—at several prehistoric sites in the westerly parts of the area.

Today, it is generally recognized that the story of man's occupation of the northwestern Plains covers a span of several thousand years. Unfortunately, this long record is still very inadequately sampled, and not much is known of the interrelationships of the various complexes present. Mulloy approaches the problem of interpretation with a three-period frame of reference. To the early period are assigned Folsom, "Yuma," and other ancient hunting complexes and materials attributable to the paleo-Indian. The middle period includes a variety of younger prehistoric materials—representing mainly nonceramic hunting and gathering cultures—about which we still know very little. The late period concerns historic materials and their immediate antecedents, notably those of the village Indians of the Upper Missouri and their contemporaries.

In this reviewer's opinion, Mulloy's discussion of middle period archaeology and of certain late period problems in the Montana region are the most stimulating part of his presentation. He notes suggestive similarities "in both content and sequence" between Signal Butte I and II and Pictograph Cave I and II. The potential importance of bison traps, some of them with stratified bone deposits up to 20 feet thick, is properly emphasized. Such stratified cave and open sites, of course, are of very great promise, since they offer a dependable guide to sequential arrangement of the single-component sites with which the region abounds. Incidentally, too, the bison traps afford a clue to man's solution of the meat-getting problem in pre-horse days in the western plains. Systematic and comprehensive excavations at several of these bone beds are urgently needed.

Interesting late period problems revolve about the relationship of the Crow and other historic tribes to archaeological remains scattered over their Montana habitat. In part, these are tied up with the perennially intriguing problems of westward movement of erstwhile agriculturists into the plains and their transformation into buffalo hunters. On what looks like acceptable evidence, Mulloy suggests that the Crow were, at least in part, responsible for introduction of potterywares with Mandan-Hidatsa affiliations. A curious flat-bottomed ware found farther west may be Shoshone; and the relationship of this ware to the flat-bottomed steatite vessels of the Yellowstone region still needs to be worked out.

Other interesting and puzzling subjects include tipi rings, various boulder alignments and configurations, and petrographs. Mostly these are still unassigned culturally, because associated culture-diagnostic materials are rare or absent. I am inclined to agree with Mulloy that a good many of the tipi rings are probably of ceremonial, rather than practical, purpose.

The problem of correlating the many sites and defining the several culture horizons that undoubtedly existed in the northwestern plains is not an easy one. Mulloy's view that stylistic changes in artifacts, correlated with successive time periods may be a helpful concept is undoubtedly sound. This approach, express or implied, has already been used by workers here. Projectile point sequences in this largely pottery-less area will have to take the place of sherd sequences farther east in the Plains. As more data and larger quantities of specimens accumulate, other artifacts may turn out to be equally useful in this problem.

As the first summary of archaeology in the northwestern plains, by one who has been active in the field for a number of years, Mulloy's paper is a most welcome one. It suffers by reason of a four-year delay in publication, and by the fact that the findings of the River Basin Surveys were not available at the time of writing. These findings will materially amplify Mulloy's views, though I doubt that he will be proved wrong on many points. I wish only that he had devoted a larger portion of his paper to more detailed discussion of the still little-known Montana-Wyoming region.

Nearly a half century ago, Harlan Smith included the northwestern plains in his "Darkest America," archaeologically speaking. For years, it has been treated by anthropologists as an area without historic depth, and with no remains that could not be attributed to the immediate ancestors of the prehistoric tribes there resident. Mulloy's paper, a preview of what we may expect as field work and publication go forward, reminds us how out-of-date this view is.

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Washington 25

Culture Sequence in the Lower Missouri Valley. CARL H. CHAPMAN.

This chapter, submitted in March 1948, comprises an excellent presentation of Missouri prehistory. More than that it brings the reader into the period of early history and the closing phases of Indian life in the area. Chapman has wisely avoided the use of dates, except for the historical period, and drawn upon his own data and that of others in surrounding areas as the basis of chronological ordering. His terminology is in keeping with that of others in the field except for the use of the term "Archaic" instead of "Paleo-Indian" to denote Folsom and Nebo Hill materials. Each of the periods is described as to material content and the illustrations, drawn by Mrs. Chapman, are extremely well done and ample. Chapman closes his chapter with a discussion of the sequence of cultures and justification for ordering them from earliest to latest. This chapter does credit both to the author and the area which, incidentally, is a strategic one in Mississippi Valley prehistory.

Archeology of the Illinois Valley: 1950. DONALD E. WRAY.

The author of this chapter was confronted with the difficult task of elucidating an involved and sometimes confused situation on the basis of limited and "spotty" information. The difficulty is anticipated in the opening statement and perfectly summarized in the closing paragraph. The foregoing should not be construed as a criticism of Wray. Interpretation of the prehistory of the Illinois Valley, like the entire Mississippi Valley, is in a state of flux at present and will probably remain so for some time to come.

The "Central Area" is the most clearly defined of the three covered by Wray. The reviewer would agree with the editor, that the attempt to divide Hopewell into time categories, or divisions, is "provocative" on the basis of present data. But Wray, in so dividing the complex, may well be anticipating the future.

The presence of Middle Mississippi in the Illinois Valley compelled Wray to include the "Cahokia Area" and the Cahokia site in his chapter. The potential of this classic site and the meagre amount of data available from it preclude a rationalization by anyone at this time—in fact it may never be possible. One statement to the effect that Cahokia was a center "before Old Village with a temple mound complex of southern origin which is pre-Middle Mississippian" should have been at least modestly amplified by a listing of the elements other than "temple mounds" which comprise the "complex."

In each of Wray's three areas, the inability to definitely relate historical tribes with archaeological complexes reflects the difficulties involved in utilizing "the historical approach" in the Ohio-Mississippi Valleys.

Hopewellian Dress in Illinois. THORNE DEUEL.

Deuel takes the good museum man's view that archaeological materials should be interpreted in the light of ethnography rather than statistics alone. Such interpretation must be made for the modern museum patron and we would all derive benefits from archaeological reports prepared in this manner.

Deuel's chapter is an excellent example of the amount of data which can be extracted from a limited source, in this case clay figurines of Hopewellian provenience. Admittedly figurines are not too common an item in Mississippi Valley archaeology and are completely absent in some complexes, but when found the potential should be exhausted. Nor need figurines be the sole source of such data. Closer observation of grave con-

ditions might well bear fruit, as Deuel points out and demonstrates.

To this reviewer, the drawings—Figures 85 through 91—are somewhat disappointing.

Archeology of the Lower Ohio Valley. MOREAU S. MAXWELL.

Perhaps the reduction of this chapter "by one-third" makes the difference, but in its present form it seems to be more correctly the archaeology of the Carbondale area, or southern Illinois at the most, than of the Lower Valley. It would be presumed that the Lower Valley should include much of Indiana, southern Illinois, and western Kentucky and Tennessee.

A number of ideas expressed by the author certainly would be subject to fruitless debate; for example, that the "primary diffusion of culture was with the current of the watershed"; that Baumer people "are the direct descendants of the 'shellmound' people of the Pickwick Aspect"; that the Crab Orchard Site was constantly occupied "over a period of nine hundred years" with a resultant debris accumulation "not more than two feet thick."

The reviewer would take definite exception to the suggestion that the Southern Cult is as late as post-Kincaid and that "cult traits are frequent in the Angel Site and the King Site" and rare "in the Kincaid Focus." They are not "frequent" at Angel and perhaps are not at the King Site as well.

The area which was either chosen by Maxwell, or was assigned to him, is one of the most complex archaeological provinces in the eastern United States. Just how well it has been handled will be more obvious in the future, when more data is available, than is apparent at this time.

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The Tennessee Area. MADELINE KNEBERG.

There are three natural divisions into which Tennessee may be divided, viz., east Tennessee, middle Tennessee, and west Tennessee. Each of these natural areas has a separate and somewhat localized prehistory. The tracing of these separate prehistories and their interrelationships is the subjectively woven fabric of this chapter.

"Folsom" points have been found in nearly every part of the state but it is hardly likely that any of these points are true Folsom Fluted specimens. At the time this chapter was written Krieger's differentiation of Folsom and Clovis Fluted points, and their significant geographic distribution had not been noted. Kneberg, for unstated reasons, indicates that these "Folsom" hunters were in the area "nine or ten millennia ago." However, it is with Archaic peoples "perhaps two thousand years ago" that there "began the continuous story of human life in Tennessee." This author believes that the Archaic peoples (Eva) of western Tennessee, though without pottery or agriculture, were aware of both and later obtained pottery from the "Baumer people" and may also have traded for corn. It is suggested that these peoples continued unchanged, buying pottery at first and later "an increased population may have induced them to clear fields and plant corn to supplement their fare." Because shell-tempered potsherds occur on some Archaic sites it is thought "that the late Eva people must have acquired [these] from early Mississippi peoples invading the region." The Eva focus is classified as Archaic.

Archaic remains are absent in the east Tennessee region, the earliest culture is called The Watts Bar, a Woodland manifestation. Apparently this group is restricted to the French Broad River valley. Other Woodland peoples, the Candy Creek culture, along the Hiwassee River, imported pottery decoration ideas from north Georgia and extended their limestone-tempered pottery making ideas into western Tennessee. Meanwhile, in most of western Tennessee, Archaic peoples persisted.

Later Woodland people, the burial-mound-using Hamilton culture dominated the eastern and middle portions of Tennessee. In western Tennessee it was the Copena-like Decatur culture that became powerful. In varying degree the Hamilton-Copena-Decatur cultures were overrun by invading Mississippi peoples identified by Kneberg as Muskhogeans, whose migration legends are interpreted as history by many students of southeastern prehistory. In the west the Obion culture is the counterpart of the eastern Tennessee Hiwassee Island group. The latter people made shell-tempered pottery; the former made clay-grit tempered ware.

A number of other minor, localized Mississippi "people" are referred to in the remainder of the paper—the Gordon, Duck River, and Gray are western Tennessee variants. In eastern Tennessee, Kneberg continues an old tradition by distilling a heady mixture of Mississippi cultures—Dallas and Mouse Creek—with Cherokee, Yuchi, and Creeks.

Kneberg's chapter reads easily and deals in general statements with which it is difficult to find major faults but for which there is only the meagerest of published evidence. Nevertheless, when this chapter is read against the background of Rowe's and Whiteford's contributions it becomes more meaningful. The factual data supporting this narrative are, in part, excellently displayed in the accompanying illustrations.

Woodland Cultures of Eastern Tennessee. CHANDLER W. ROWE.

Woodland materials in east Tennessee are classified into two aspects: Upper Valley and Middle Valley. In the former is recognized Watts Bar and Candy Creek foci; the latter is the Hamilton focus. Of about the same geographical distribution, some temporal differences among these foci are suggested. Watts Bar is early Woodland, followed by Candy Creek which is succeeded by Hamilton, the last Woodland manifestation in east Tennessee. Although Watts Bar is early Woodland, "it

is not the initial cultural level in this region since it is preceded by a shell mound culture in certain areas." Whether this shell mound culture is also early Woodland or Archaic is not stated nor implied, but Kneberg has indicated in the preceding chapter that Archaic is absent in eastern Tennessee.

The Candy Creek focus is characterized by closely-placed, circular house patterns, kettle-shaped pits, limestone-tempered or crushed-quartzite tempered pottery, cord-marked or plain or simple-stamped. Tubular steatite pipes, conical tapered celts, fully grooved axes, and nut-stones constitute important stone artifacts. The predominant projectile point is straight stemmed with a straight shoulder and either a short or long thick blade. Fully-flexed burials occur in the village area in small pits and are accompanied by burial furniture.

The Watts Bar focus is not described, presumably because the Candy Creek focus is quite representative of the Upper Valley aspect.

The Hamilton focus or Middle Valley aspect has no identified house type. Cord-marked, brushed, and plain limestone-tempered pottery as well as pottery elbow pipes seem characteristic. An important projectile point type is the triangular point with straight or incurved sides and incurved base. The most distinctive feature of the Hamilton people is the use of burial mounds. Evidence has been found that suggests a burial was accomplished by laying a body, a single skull, or a cremation on a surface and covering with earth rather than digging pits into the mound.

When an attempt is made to ascertain the degree of relationship among Hamilton, Copena, and Adena only the most generalized conclusions may be reached. No specific close relations are discernible between Hamilton and Copena. Apparently, no genetic connections are demonstrable for Hamilton and Adena, but such traits that are shared by Hamilton and Adena are also found in Copena; their generalized nature is such that they might also be shared by any number of other Woodland manifestations; thus, it seems all three are somewhat related as parts of the "general southeastern Woodland culture."

Candy Creek materials are not compared with any others but are considered coeval with early Swift Creek and Adena; Hamilton is then later, "probably Middle Woodland (early to late Hopewell), contemporaneous with Copena, and is said to have existed at the time of the Middle Mississippi occupation in that area."

A Frame of Reference for the Archeology of Eastern Tennessee. ANDREW H. WHITEFORD.

The Tennessee River valley has been an area of relatively intense archaeological interest both from professionals and nonprofessionals for many years. The names of Moore, Harrington, and Thomas are repeatedly the basic references in any work on the valley. Despite these early investigations nothing very comprehensive was known for the valley until the emergency archaeological programs began two decades ago.

This discourse is an epitome of a larger study conducted by Whiteford while at the University of Tennessee Laboratory of Anthropology — a study whose goal was to render intelligible and usable previous archaeological disclosures in eastern Tennessee. Hence, a portion of the chapter is concerned with W. S. Webb's Norris Basin material. Another analysis integrates Harrington's Tennessee River excavations into the picture. Then, with no little difficulty and ingenuity, C. B. Moore's ubiquitous diggings are evaluated in terms of the classification scheme adopted. Finally, the work done at the instigation of Cyrus Thomas is coordinated as well as could be expected. These materials, plus a few miscellaneous excavations, are summarized in tabular form in order to show, site by site, the cultural affiliations.

Since the primary purpose of this paper was "to examine the early published data on the archaeology of eastern Tennessee and to ascertain the possibilities of reinterpretation in terms of the recent archaeological analysis of the culture of the Chickamauga Basin in the same region" it succeeds very well. One cannot but wish that there were more correlations of these eastern Tennessee cultures with contiguous areas. A comparison of Dallas materials with northern Mississippi Valley expressions such as Fort Ancient would be very profitable. Although persons familiar with the Tennessee area, especially East Tennessee, may, with some difficulty, fit Norris and Chickamauga remains into a grander pattern of prehistory, it is almost impossible to the casual student.

Alabama Archeology: A Summary. DAVID L. DEJARNETTE.

Alabama prehistory begins with an intensive Archaic occupancy. It is doubtful if any earlier representation will ever be found. Archaic is followed by early Woodland, middle Woodland, and finally middle Mississippi.

The Archaic horizon is represented in north Alabama along the Tennessee River usually as shell heaps. Although no habitations are known, flexed and "sitting" burials are numerous. Cremations and dog burials are frequent. Many artifacts are scattered throughout the midden, one important group being atlatl parts; another vessels of steatite and sandstone.

Transitional Archaic — early Woodland is marked by the introduction of pottery, wide-spread occupation throughout Alabama, and the initial appearance of burial mounds. The pottery is of three recognizable groups — Wheeler fiber-tempered types, Alexander sand-tempered, and Deptford sand- and grit-tempered varieties. The McQuorquodale mound in southwest Alabama is considered to be the earliest burial mound known for the state.

Middle Woodland — Hopewellian is recognized through the new pottery types introduced and the Copena burial mound complex. The pottery is crushed limestone

tempered and is thought to have been diffused into Alabama's Tennessee River Valley from the northeast. In southwest Alabama, a Hopewellian pottery — here called Porter Hopewellian — is usually sand tempered but occasionally is clay tempered. Eastward, along the Chattahoochee River, a similar ware appears plus Swift Creek Complicated Stamped.

The Copena mounds are relatively large and conoidal, and generally have a number of burials in prepared pits using clay or logs or bark. DeJarnette notes that several burials seem to be so prepared before constructing the mound. It is also possible that these precedent burials were evidence of the older trait of burying in the village area. Most Copena mounds, like Adena, have a central feature or some spectacular burial that seems to have been the incentive for initiating mound construction.

Copena traits are often distinctive, such as the elbow and zoomorphic steatite pipes, the long projectile points, the greenstone celts, and the extensive use of copper and galena as burial furniture. Only one village site seems related to the mound complex and it exhibited circular house patterns, pits, and a flexed burial.

What is called transitional Woodland is characterized by McKelvey pottery types. Obvious relations are with the Mississippi Valley to the west. The importance of this new pottery group is further emphasized when it is correlated with the small temple mound sites in various parts of western Alabama. DeJarnette rightly concluded that McKelvey pottery is more Woodland than middle Mississippi.

Middle Mississippi in Alabama represents the widest occupation, highest cultural attainments, and has a final burial urn period. Middle Mississippi cultural remains can be derived from earlier cultures, such as Copena, only by great stretches of imagination. It does seem likely that some traits, such as the small temple mounds of transitional Woodland mentioned above, are more extensive developments in middle Mississippi. Not only are large flat-topped mounds a part of the culture but burial mounds as well. House patterns are typically rectangular. Shell-tempered pottery is often plain but many incised, punctate, noded, appliqued, etc., types are characteristic. A series of artifacts with wide relationships called "cult" objects are beautifully represented in Alabama, especially at Moundville. A few middle Mississippi vessels are associated with European trade goods. Perhaps it is a significant point that brushed and complicated stamped types are more often these late comers.

A cogent point made by DeJarnette is that Moundville contains a great body of "basic" middle Mississippi materials despite the wealth of fancy cult objects. Hence, it is argued that Moundville was other than a ceremonial center although evidence is lacking for any extensive occupation prior to cult heydays. It seems almost certain that Moundville was unoccupied when DeSoto passed nearby.

Perhaps the final aboriginal occupants in central Alabama are the burial urn people. These large vessels with covers generally contained the disjointed bones of an adult or perhaps one or more children's skeletons. European trade goods are common burial furniture, attesting their lateness.

DeJarnette's treatment of the Alabama prehistoric scene leaves little to be desired. It is easily usable for comparative studies and brings out unpublished data that are valuable "gap fillers" especially along the Gulf Coastal Plain. The materials are generally treated in a cautious manner, as though to let them speak for themselves, but they may be evaluated readily. Although DeJarnette has been preoccupied with other than archaeological materials in recent years, his first-hand acquaintance with Alabama prehistory makes this a personal record.

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Prehistory of the Lower Mississippi Valley. JESSE D. JENNINGS.

This paper rightly begins by pointing out the extent to which Lower Mississippi archaeology is dependent on pottery studies, a source of both strength and weakness. In no other region, I dare say, are the shifting types and frequencies handled with more assurance; on the other hand, the ignorance of the cultural contexts from which they have been abstracted is often total. This is one of the faults of Jennings' paper that he cannot be blamed for.

It was submitted in 1947 but was written, I am told, in 1946 and no significant changes, except deletions, were made subsequent to that date. Discounting the war years, this means that the paper represents the prevailing position of Southeasternists about 1941. That position was in favor of a general synchroneity of cultural development throughout the area. It was fostered by the practice, then new and shiny, of matching local and regional sequences in happy disregard of *internal* time dimensions of the individual units. Whether on a horizontal or sloping profile *a la* Ford and Willey the result, so far as developmental theory goes, was the same. It did not occur to any of us that since the method was based on a prior assumption of synchroneity, it couldn't fail to validate the theory.

Therefore, it became sound practice to "fill in" blanks in a given sequence by recourse to corresponding periods elsewhere. The most flagrant example perhaps is to be found in Phillips, Ford and Griffin, 1951. It is a case of rare poetic justice that the first two of these authors were reading page proof of this piece of science fiction while excavating an "archaic" site which bore no resemblance whatever to the culture therein depicted for that period.

Jennings, however, doesn't confine this technique to the early periods. His narrative reconstruction constantly wavers back and forth between the Lower Valley and general Southeast. Nor does he fail to

take advantage of the slippery nature of the local data by filling in one period with data from another. It is just the opposite of Griffin's method. Here the reader is encouraged to think we know more, not less, than is actually the case. For example, he describes the archaic in terms of the rich content of the northern Alabama and Kentucky shell middens, and then adds for good measure the nonceramic data from the Tchefuncte middens (previously classified as early Woodland). The observant reader is somewhat shocked to find a page or two further on that the only "true" archaic sites in the area are Copell (a burial site of no particular significance in the connection) and Poverty Point, which Jennings could not know then, is certainly not Archaic.

One gets the same feeling that the hand is quicker than the eye in some of the later periods. This bothers me most in that part of the sequence — about Troyville-Coles Creek times — when temple mounds first appear. Jennings is quite correct, I think, in pointing out the transitional nature of Troyville, so it is in effect Coles Creek we are concerned with. It is a mistake, in my opinion, to place Coles Creek in a full Mississippi context — temple mounds do not a Mississippi culture make. Jennings does so, however, with great plausibility by describing Mississippi culture as found in the nuclear regions, at the same time giving the impression that this is Coles Creek, or would be if we had sufficient data. Most of the traits cited are not characteristic of Coles Creek and some are not even present. Nor is the situation clarified by presenting the great Anna and Emerald sites as Coles Creek in one place (fig. 142) and Plaquemine, or even later, in another (p. 267).

Jennings makes a significant point in emphasizing the climax and decline of the Mississippi tradition in the Lower Valley (and Southeast generally) but referring the first of these events to the Coles Creek, and the second to the Plaquemine period, is, in my opinion, putting them both too early in the sequence. This is part of a larger misconception, that Mississippi culture was brought in from Mexico (p. 270). This idea was one of the casualties of the Lower Mississippi Survey, whose findings indicated that this culture, whatever its ultimate origins, was moving down the River in late prehistoric times. Coles Creek was probably contemporary with early Mississippi phases further north (Old Village, etc.) but it was not a climax, nor, as already noted, was it Mississippi. The Plaquemine, stigmatized as postclimactic by Jennings (and Quimby) now appears to have been the climax phase in this area, the period of greatest activity at the great sites of Anna, Emerald and Lake George, and even here many of the characteristic Mississippi elements are lacking. This hypothesis of a late downstream movement of Mississippi culture (as distinct from the Temple Mound complex which was already there) may explain the comparative lack of "cult" material in the Lower Valley. The "true religion" was long in coming and had perhaps passed its peak of intensity by the time of its arrival.

In order to conclude on a happier note, I could wish this paper bore some such title as "Continuity and Climax in the Southeast." If, upon laying it down, we are not much wiser about specific events in the Lower Valley, there is ample compensation in a sense of the sweep of history on a larger scale. This is a case where the woods are distinctly visible notwithstanding a certain amount of confusion about the trees.

Prehistoric Cultures of the Central Mississippi Valley. JAMES B. GRIFFIN.

The editor's policy of letting the papers in this volume stand as written, in spite of the long delay in publication, works out badly in his own case. This paper written before 1948, covers in large part the same ground as the *Lower Mississippi* report (Phillips, Ford and Griffin, 1951) written later but published earlier. Wherever the two works fail to agree—the different designations of the area is only one instance—we may take it that the 1951 publication represents either (1) Griffin's more mature position or (2) one of those rare instances when he deferred to the superior judgment of his collaborators. This is pointed out only for the benefit of the handful of specialists who may be following archaeological developments in the Lower Mississippi closely enough to be confused by such discrepancies.

A more important issue is the impression given here of leanness in the earlier pre-Mississippi periods. Our survey, to be sure, resulted in no new formulations of cultural units, for various reasons that need not be gone into here, but a large number of pre-Mississippi sites were sampled and it would have been possible for Griffin to rough out a number of early and middle Woodland "foci" to give a somewhat less top—, or Mississippi —, heavy, effect to his presentation.

Apart from this, one can find little fault with that presentation. Four Mississippi foci are compactly described to the limit of existing field information and admirably illustrated, an indispensable foundation for the more intensive contextual studies indicated as the next step for students of the area. Those who are aware of the author's encyclopedic knowledge of Eastern archaeology—and who is not?—will regret with me his reluctance to discuss more fully the intra- and extra-relationships of these four foci. But this again, perhaps, is to criticize the paper for having been written in 1948.

A particular opportunity that Griffin could have taken, however—even at that time—would have been to comment on the significance of the general lack of early Mississippi remains (i.e., comparable to Macon Plateau, Hiwassee Island, Old Village, etc.) below the mouth of the Ohio, a circumstance supporting one of his favorite theories, to-wit, that the Mississippi tradition, whatever its ultimate origins, focalized in the Cahokia region and spread outward from there. He could have shown, I think, that the four foci delineated in his paper are progressively later in date from north to south, indicating a slow spread down the River.

In sum, while this paper supplements the Lower Mississippi Survey report in a very substantial fashion, for any insight on the author's interpretative position, one still has to go to that report.

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Survey of Caddoan Area Archeology. KENNETH G. ORR.

Caddoan archaeology has become exceedingly complex and badly needs a good over-all survey of (a) the traits of each of its foci, now 16 in number and likely to increase still more; (b) the relationships of these foci with one another on time levels and in their changes through the total time span; and (c) correlations with surrounding regions.

The survey under review fails to clarify any of these problems and confuses many critical points. Some controversial issues are stated with far too much confidence. The author appears to have a propensity for looking in one direction only for the "source" of a particular trait, rather than giving a balanced account of what would be involved with more thorough study. Thus, much is made of a purportedly close relationship between Fourche-Maline and Tchefuncte, whereas this is not at all strong or direct, the individual traits of these complexes being found widely in the Eastern states. Much of this results from the author's efforts to show that archaeological remains of the Caddoan region fit rather readily into Griffin's system of stages, a very difficult matter which requires a great deal more basic work in the region before such alignments can be made. A better approach would have been to examine the content of the various cultural units or foci first, then discuss the problems of fit or lack of fit with these stages, plainly stating the success with which this may be done with present information. The author is primarily concerned with some of the traits revealed by excavations in the Spiro mound area, compared with odds and ends of traits found in some of the Caddoan and Louisiana foci, and occasionally with something in some other part of the Southeast. None of the foci connected with Caddoan peoples themselves are treated with even passable fullness.

A complete critical review, with minimal explanations, would require as much space as the original chapter. Hence I will concentrate on the underlying trends more than on specific statements.

1. A major difficulty is that of terminology, a common situation in Eastern archaeology and not to be solved by any one person. In this case, however, certain innovations are made against which I strongly protest because they are applied to cultural terms originated by myself, but without any stated reason and without any examination of the materials. Who, for example, has ever suggested that Texarkana focus can be divided into "Early" and "Late"? This is done with several of the foci. "Early" and "Late" are also applied repeatedly to the Gibson and Fulton aspects. Orr also assumes over and over that a trait in one focus automatically becomes the property of a whole aspect, or, according to him, the "Early" or "Late" part of an aspect. The principal of slow diffusion of traits into the region or across the region can not possibly be discussed with any enlightenment as long as their occurrence is not considered more carefully. The "influence" of such complexes as Marksville, Coles Creek, and others, is constantly assumed with no demonstration; sometimes trade objects are confused with "influence." Common traits may be cited between cultures without loose deductions about "influence."

Orr apparently sees no inconsistency in equating the Fulton aspect with a "Late Mississippi" stage, and the Gibson aspect with "Early Mississippi," then discussing influences of "Middle Mississippi" upon both of them. That "Middle" should sometimes be applied to a geographical middle between north and south in the Eastern states, sometimes to a temporal middle between "early" and "late," and sometimes to an assemblage of cultural traits without either space or time connotation, is typical of this abused term. Orr accepts the situation (as do most) and proceeds to make the archaeological picture fit the terms. He also makes certain very broad statements which cannot be accepted without a great deal of qualification, which he omits. Thus, "Middle Mississippi" is said to have ties with Weeden Island and the West Indies, while—in contrast—"Gibson's ties are with Hopewell and Middle America" (p. 239). Each statement has some element of truth but is pointless as it stands.

2. Griffin's paleo-Indian stage is thoroughly confused with the Archaic in many chapters of this volume, including that under review. Such expressions as "Folsomoid culture" and "Folsomoid-Yuma" might have been accepted in 1948 when the manuscript was written, but cannot be now. The presence of paleo-Indian artifacts in the Caddoan region is mentioned for only one small area, northwest Louisiana, on the basis of C. H. Webb's published report. Actually, Clovis Fluted, Plainview, and Scottsbluff points occur sporadically throughout the region. A true Archaic stage is cited only for Harrington's Gulpha site in Arkansas, whereas it likewise occurs throughout the region. Since very little of this has been published the omissions can scarcely be criticized, but should be known.

3. The Ozarks Plateau and adjoining northeast Oklahoma are included in the Caddoan area on the basis of potsherds which Orr says are of Marksville, Coles Creek, "Gibson Aspect," and "Fulton Aspect" types. I see no reason to include these northern areas under the heading of Caddoan archaeology. Even if some of the Ozarks pottery belongs to some of the above types, the bulk of it certainly does not; the presence of true Marksville sherds (in contrast to Hopewell) would be peculiar here inasmuch as Hopewellian communities existed to the east, west, and north of the Ozarks. The various Ozarks

traits do not suggest any close affiliation with Caddoan peoples or their predecessors in the region generally assigned to them, which ends not far north of the Arkansas River. Even in the Ozarks, Orr attempts to relate projectile points ("straight-stemmed") to forms in Louisiana such as in Tchefuncte, a meaningless deduction without analysis of projectile points over much wider areas. In his chapter on *Culture Sequence in the Lower Missouri Valley*, Chapman (p. 139) states that the Ozarks belong in that region. It is plain that both the Ozarks and northeast Oklahoma could have been discussed archaeologically in that chapter also.

4. We learn that "The best example of Early Woodland level is that called Fourche-Maline, which . . . resembles Tchefuncte. . . ." (p. 242). Their potteries are said to be especially close. Anyone who has examined both would find it hard to see this resemblance, other than a common lack of some features of Mississippian wares. Again such a "relationship" cannot be accepted without a survey of the specific ceramic and nonceramic features of both complexes. The author apparently insists on this alignment in order to show that Griffin's early Woodland stage is present in the Caddoan region. Orr discusses Fourche-Maline again under the heading of "Middle Woodland Stage" (pp. 244-5), where it is admitted that the Kirkham site in southwest Arkansas not only has Marksville pottery on it (among others) but has other specific resemblances to Fourche-Maline. This seems to be a more realistic comparison than that with Tchefuncte; moreover, the only trade pottery reported yet from a Fourche-Maline site is a single sherd of Marksville ware.[1]

All of this is significant in determining whether Griffin's early Woodland stage is *present at all in the Caddoan region*. Since Fourche-Maline sites are very few in number and confined to a small area in central-east Oklahoma (so far as known); there are several other small Marksville sites in western Arkansas besides Kirkham, but none in Oklahoma and Texas;[2] and Fourche-Maline can be related to Marksville much more readily than to any earlier unit, my own conclusion would be that an "Early Woodland Stage" is not present. Instead, a "Middle Woodland" represented by Marksville is grafted directly upon the Archaic in the more eastern parts of the Caddoan region, in Arkansas but slightly, and rather strongly in Louisiana. In northeast Texas and eastern Oklahoma, Mississippian or Temple Mound culture appears to be grafted directly on Archaic with no Woodland or Burial Mound occupation intervening (excepting, very locally, the Fourche-Maline).

5. In discussing an "Early Mississippi Stage," Orr's use of "Coles Creek" is now somewhat obsolete because of recent re-definitions by Ford, Phillips, Griffin, Cotter, and others. But whether used in the older or the more recent sense, a number of misconceptions about Coles Creek pervade the literature on Spiro, Crenshaw, and the Caddoan aspects. Orr appears to have taken literally Ford's 1936 statement that Coles Creek precedes Caddo, then assumed that any Coles Creek traits or trade ware at Spiro or Crenshaw must precede those of the Caddoan peoples proper. Thus, his Evans component (which in 1946 he called the early Spiro Component) is assumed to be that which existed at the Spiro Mound when "Coles Creek influences arrived" and before the Southern Cult began to develop. Aside from some obvious trade pieces of Coles Creek Incised and French Fork Incised, found in graves in the fields between the mounds and not tied in with the latter, there is no hint as to what the "influences" were. In the lower Mississippi Valley there is a widespread idea that pottery vessels with encircling incised lines below the lip constitute "Coles Creek influence" wherever they occur. For my money, this is just a very simple design idea which was shared by Coles Creek and many other complexes in this region. Vessels with these lines occur in Haley focus material, and some in Spiro focus itself, to name only the closest complexes; but then perhaps this is not what was meant in relating Evans to Coles Creek.

The knotty problem of what existed on the Spiro site before the Spiro focus with its Southern Cult riches appeared is one which a lot of archaeologists would like to know. I personally do not think that any good answer is forthcoming until the graves of the Craig mound are completely analyzed, with a list of the objects associated with every one of them. It may be that the 35 graves assigned to an Evans component by Orr constitute a period of occupation distinct from and preceding that of the Cult and Spiro focus (or Craig component). It also seems possible to me that graves without Cult objects were assigned to one component, and those with such objects to the other. Evans, however, had small arrowpoints and Copena points, according to the division presented, and two plain pottery types (the only ones mentioned), one of which is polished, the other seldom polished. The latter, Spiro Plain, is said to be nearly identical to the main undecorated type of Fourche-Maline (p. 247). Is it not possible then that a true Fourche-Maline occupation existed here shortly before the Spiro focus came into existence, and that the latter thus followed upon a "Middle Woodland" stage with no great time lag? Is it not possible too that a close analysis of all the graves would show that some of them actually belong to a Fourche-Maline occupation, and others, with small arrowpoints and Copena points or blades (and probably

[1] After this was written, an important contribution to the clarification of Fourche-Maline appeared in Robert E. Bell's article, "The Scott Site, Le Flore County, Oklahoma" (*American Antiquity*, vol 18, pp. 314-31, 1953). There is some question whether Fourche-Maline, as used so far, constitutes a single complex. If more than one, Bell believes it may have extended from Archaic through early Woodland. Bell (correctly, I believe) does not bring Tchefuncte into the problem at all.

[2] Like Griffin in 1946, Orr mentions an "Orange Focus" in southeast Texas, which for a time I also thought might be defined there. It now seems certain that a few sites in Orange County merely have some Marksville trade sherds on them and the idea of a separate focus should be abandoned.

other traits) belong to the Spiro focus? I suggest this only as a problem, for a distinct Evans component that belonged to neither of these but bridged the gap between them did perhaps exist. Bell's recent excavations in the Fourche-Maline area have shown how difficult it is to assign his new material to any of these units as now constituted, which suggests a thorough re-analysis is in order. To me, it is still impossible to decide whether Coles Creek trade pottery in this area is earlier or later or contemporary with the apex of the Southern Cult.

Orr further suggests a connection between Evans component and the Adena aspect, in plain pottery as well as other traits, but withdraws this in favor of "Early Mississippi" through Coles Creek "pottery traits as well as small projectile points." Small projectile points as such do not need to be derived from this direction. That both Fourche-Maline in middle Woodland (hardly early Woodland), and Coles Creek in early Mississippi could have played upon the Evans component would mean that these stages overlapped in time in the Spiro area— a possibility, but one that needs much broader analysis of everything involved.

6. The terms Crenshaw I, II, and III are used from my chart in the 1946 monograph on *Culture Complexes and Chronology in Northern Texas*. This division of the Crenshaw site was withdrawn in the 1949 monograph on the Davis site, and several other realignments in the latter publication are ignored in the present chapter. Crenshaw should not have been divided into numbered periods at all, for I was later able to make a grave-by-grave analysis of Judge Lemley's collections as well as those of M. P. Miroir from this site. There are plainly four complexes of graves rather than three. One of these consists of Coles Creek graves pure and simple, through which graves of Haley and Texarkana foci were later sunk. The fourth, however, consists of several very large graves with skeletons laid in rows and rich burial furniture piled around the walls, and pottery which appears to be a hybrid of Spiro and Alto foci features; *this* grave complex has not yet been related to the Coles Creek occupation and it is difficult to say whether it precedes or follows the latter. Lemley has for some years been preparing a new study of Crenshaw which should make this situation clear. For the present it is important to note that both the Coles Creek and the Spiro-Alto-like occupation used almost identical graves, very large and with rows of skeletons laid neatly in cardinal directions, etc., but with very distinct ceramics. The delicate long-stemmed pottery pipes which Orr and several others (including myself) have erroneously assigned to the Coles Creek graves here actually all came from graves of the early Caddoan occupation. Orr at any rate should have recognized the so-called Crenshaw I for what it is, an actual Coles Creek occupation, not something "influenced" by Coles Creek along with the Evans component (p. 247).

7. Turning to the Craig component at Spiro (called "Early Middle Spiro Component" by Orr in 1946) and the emergence of the Southern Cult in eastern Oklahoma, we read that ". . . we are now able to place the florescence of the Southern Cult at a point in time between Gahagan and Alto representing the initial cult period, and the Brown, Sanders, and Haley groups representing the decline of the cult" (p. 247). While there may be an "initial cult period" somewhere in the Eastern United States, I feel that neither Gahagan nor Alto focus can be so construed. Gahagan has ceremonial material which parallels some of that at Spiro (effigy pipes, pulley-shaped earspools, spuds, discoidal stones, etc.) but with more differences than similarities and totally lacking the engraved shells so important to the Cult. Gahagan undoubtedly had a burial cult partially related to that of Spiro, but whether this was a local chapter of the widespread Southern Cult or something different depends on how one defines the Cult. Alto focus has only the small stone head with forked-eye symbol, atop the primary mound platform, at the Davis site, to show for the Cult. Two Spiro focus trade sherds were also found on this platform, but it does not seem possible from this scanty evidence to show exactly where Spiro can be related in time to Gahagan and Alto; the three were roughly contemporaneous.

Aside from this, Orr says (p. 247) that the Brown component at Spiro (formerly "Late Middle Spiro") represents a time of decline in the Cult along with the Sanders site in Texas and Haley in Arkansas. Whether this is decline or the latter components simply never had much of a Cult is a moot question; Haley, like Gahagan, seems to have had its own expressions, only slightly overlapping those of the great Spiro center. Of the Craig component it is said that "Engraved conch shells are rare and the art form is rudimentary. This contrasts with the elaborate shell carving found in Brown" (p. 248). The author thus seems unable to decide whether it was the Craig or the Brown component which contains the richest expression of the Cult. There perhaps is little difference between them, the graves having been assigned to one or the other according to the richness of their offerings. "Coles Creek connections" again creep in with the Brown component and once more we are not told what they are. Many errors in fact occur which will take too much space to cite. For example, I am quoted as having found connections between Sanders focus and "Old Village" at Cahokia in the presence of Cahokia-type notched triangular arrowpoints; such points do occur at Gahagan and Spiro but not in Sanders focus. "By-cymbal" (*sic*) earspools are mentioned whereas these are pulley-shaped and not at all like Hopewellian forms called "by-cymbal." The term "Middle Gibson" comes in, certainly an abortive one for material in one component of a single site in the whole aspect.

The graves of both the Craig and the Brown components appear to have some inverse relationship in that where conch shells are numerous, pottery vessels are not, in the same graves, and vice versa (p. 248). One might also argue that a single community made such distinctions in more or less contemporaneous burials, according to social class, sex, or simply the kinds and amounts of personal property. In other words, the

method of analysis may have produced two components with the implication of a time difference when there was only one. To the author's credit it should be said that all of this is extremely difficult going, made much more so by the loss of crucial field notes and data of all kinds from the WPA excavation work. The author should, however, publish the data on which he did deduce such sequences, with whatever evidence there is for the "increase," "florescence," "loss," and "decline" of such-and-such traits.

Orr also makes much of a purported importation of Spiro ceremonial features from the south, the Alto focus specifically. With this I cannot agree. There is positively a very close connection between ceramics of the Alto, Gahagan, and Spiro foci (the latter term taken to include both Craig and Brown components). However, the origin of Spiro ceremonials is a very different problem and within the Caddoan area there is no other place that helps in the slightest to account for them. Orr also emphasizes their Hopewellian background. In short, he can hardly have it both ways. No one is going to get very far with these matters until some intensive comparisons and mappings are made of all the traits involved, and much sharper chronological reckonings.

8. The Fulton aspect is discussed under "Late Mississippi Stage." Eight foci are mentioned, to which now should be added three more. In the Davis site report, I specifically stated that the Frankston focus was no longer regarded as extending into historic times (roughly, after 1650 or so), and that an Allen focus had been added for materials with European trade contact. The Fort Coffee focus is simply omitted; and Lehmer has recently defined a new focus, Turkey Bluff, in east-central Oklahoma. Orr mentions evidence of Plains influences on Fulton aspect units, but greatly exaggerates them. The borrowing of scapula hoe blades, stone elbow pipes, beveled knives, and side-notched triangular points by the fringe foci facing the Plains was all in the course of normal cultural borrowing between contiguous peoples. Orr makes much of the breakdown in intense ceremonialism with the close of Gibson aspect times, so that "strong influences swept in from the Plains" (p. 255) or that "Plains units . . . were free to impress their cultures on the high centers of the Caddoan area. . . ." (p. 253). The Fort Coffee focus, in the general Spiro area after Cult times, is certainly a fusion of Caddoan and Plains material traits, and Sanders focus is partly so, but so far as archaeology reveals, there is no specific evidence of Plains influence in the remaining 90 per cent of the Caddoan region. Well before Fulton aspect times, in fact, the Spiro focus also had relationships with Plains agricultural Indians, as seen in the near identity of its rectangular houses with four center posts, extended entranceway, etc., with those of Upper Republican; and some artifacts revealing Southern Cult symbolism occur in the Upper Republican and Nebraska aspects. I cannot see that anything drastic happened between Plains tribes and the southern Caddo, in connection with the apparent breakdown of large population centers and intense ceremonialism with the end of Gibson aspect times, or at any other time.

9. The constantly-used expression "Gibson ceremonialism" fails utterly to consider local differences and emphases. The ritualisms reflected by archaeological materials from the different Caddoan units cannot be glossed over in this simple manner of treating them as "Early" or "Late." The whole discussion of these matters, particularly on page 254, is very carelessly written.

10. Perhaps the most superficial feature of this chapter lies in the illustrations dealing with the Gibson and Fulton aspects. Most of the chapters in this volume bear at least one page of drawings for each complex or focus, a minimum amount for getting across a representative display of traits. In the present case, however, the two aspects together rate two and a half pages, of which space three-fourths is taken up by two Oklahoma foci. Figure 136 shows 38 objects to represent "Artifacts of the Gibson Aspect," of which just six come from sites other than Spiro. Figure 137, "Traits of the Fulton Aspect," has 30 drawings, of which 12 are from sites other than Fort Coffee. Several foci are not represented at all. One wonders how the author expects the reader to derive even a rudimentary view of the artifacts, burials, and houses of the foci in three other states when he shows only one or two vessels, *or* one house plan, *or* one other odd object from part of them!

The Caddoan region desperately needs more archaeological workers and far more site analysis, with stratigraphy wherever possible. The situation might be compared to an imaginary one in Puebloan archaeology, also covering large parts of four states; what would be our state of knowledge in the latter if there were but four or five persons active in it, each working but a fraction of his time and with practically no funds? The situation has improved lately with the field work of the Universities of Oklahoma and Arkansas, the River Basin Surveys, and the National Park Service, which together have provided greater facilities than anything since the WPA days; but they spend only a part of their time in this region. The preliminary frameworks are seen to be generally valid in some ways but in need of reorganization in others. The survey under review is neither a balanced summary of what is known, nor a useful guide toward future research.

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Creek and Pre-Creek, CHARLES H. FAIRBANKS; *The Cultural Sequence of the Carolina Piedmont*, JOFFRE LANNING COE; *The Archeology of Eastern Georgia and South Carolina*, JOSEPH R. CALDWELL.

Fairbanks' chapter on Georgia was submitted in 1947, too soon to take advantage of a number of important articles and monographs that began to appear shortly afterwards and a great amount of field work accomplished in the last five years. Nevertheless, the broad cultural sequence he describes is still valid, most of his interpretation is still agreeable to archaeologists in this area, and considering the date at which it was written

might even be considered prophetic. More recent investigations, some of them by Fairbanks himself, have altered certain details.

I shall therefore limit my attention here to some of the interpretive aspects which are interesting and important. Identifying the Georgia rock effigy mounds and conical rock mounds with the Mossy Oak (early Woodland) complex, Fairbanks notes that the bird symbolism found in Adena and Hopewell is present in Georgia along with other associated traits on this relatively early horizon, and some of the ceremonial features occur in the later Macon Plateau remains. Fairbanks does not imply that Macon Plateau is a lineal descendant of Adena or Copena, but suggests that an early Woodland religious cult persisted in modified form into the middle Mississippi period here and into the beginnings of the Southern Cult. He sees in the rather scanty Swift Creek materials then available (this was before Sears' Kolomoki discoveries) suggestions of a "rather elaborate side to Swift Creek life . . . a religious life of some complexity."

Fairbanks' most stimulating discussions are of the Southern Cult and its relationships. He suggests that the spread of fully agricultural peoples reached a critical stage in middle Mississippi times, giving an impetus to the Cult's spread and elaboration that was lacking in the first invasion from the West. He believes that the Cult personages represent an agricultural deity identified with the sun.

Coe's chapter on the Carolina Piedmont is well organized, extremely well written, stresses the cultural significance of his materials, and reflects many fresh viewpoints. I know of no clearer or more readable exposition of an archaeological sequence, or of one that gives, without straying too far from facts and artifacts, a more vivid feeling that you are reading of real people who practiced real cultures. While I have not yet read the entire volume in detail, it seems to me that relatively few of the area contributors actually achieve the goal promised by Eggan in the last sentence of his chapter (p. 45), of "making the past live again." Among the notable chapters in this respect are Coe's on the Carolina Piedmont, Kneberg's on the Tennessee area, and Jennings' on the Lower Mississippi valley. (I am not counting the summary chapters.)

Coe amply demonstrates that North Carolina is not a marginal area "partaking only of the crumbs from the higher tables of culture" but has a long and widespread cultural sequence that has been late in being investigated. In his section on the "Formative," which Coe has recently explored much more thoroughly, he points out that one of the clearest pictures of transition from soapstone vessels (Guilford focus) to pottery is found in the northern Piedmont, and he carries Holmes' observation on this point to a hypothesis that early Woodland pottery of the northeast (like Vinette I and Fayette Thick) or fabric-marked grit-tempered Indian Knoll sherds, may have shared their origin with the steatite-tempered vessels made on the Potomac.

In his "Developmental," Coe sees a new way of life equaling in many respects the invasion of Europeans a thousand years later. Hopewellian ceremonialism made little impression on the Piedmont. The Uwharrie focus was the most homogeneous and widespread pottery-making culture in the Piedmont, the parent culture out of which later manifestations emerged, specialized, and diverged.

Coe paints a masterfully vivid picture of his "Climactic Phase," when the virile Georgian Lamar was extending its influence northward, its coastal relatives pressing up the rivers away from the coast (possibly to escape the Spaniards, says Coe), and the Iroquois Nation and Powhatan Confederacy were pushing their political domination southward. The result of these pressures in the Piedmont was a grim struggle for life that lasted less than two hundred years. The Pee Dee focus "gives contrast and life to the study of Piedmont cultures" and the "Pee Dee individual, like his culture, was unique" for this region. In my opinion, Coe's paper ranks with the best archaeological writing yet published. It should be read by all anthropologists, both for instruction and for the sheer pleasure of reading.

Caldwell's chapter, like that of Fairbanks, was written in 1947, and Caldwell himself has been among the frequent contributors to our knowledge of eastern Georgia and South Carolina since then. So long a time lag between writing and publishing is unfortunate, but almost inevitable in a volume with so many collaborators. The chapter is essentially a restatement of the Savannah area chronology; South Carolina is included chiefly by courtesy, for the South Carolina data were scanty at that time. Again I shall not attempt to review the factual content. Among his interpretations, Caldwell sees Savannah II as a fusion of old coastal culture and middle Mississippi influences from the interior, which were later modified and manifested in the Irene (Lamar) period. In conclusion I take off my hat with respect and gratitude to Caldwell's bibliographic efficiency; he is the only archaeologist, living or dead, who to my knowledge ever found and (unsolicited) referred to a short and largely useless article I wrote thirteen years ago.

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Prehistoric Florida: A Review. JOHN W. GRIFFIN.

This survey of Florida archaeology is the latest of a series by various writers in recent years which perhaps have made the archaeological picture in this state the most completely known of any of the Southeastern states. In general, John Griffin has utilized the older material, summarizing it and adding new data. His chapter stands out well in contrast with the others in the volume.

The approach used to discuss the archaeological picture is a variant of "areas and periods," one of the two culture conceptual frameworks in Florida archaeology. Griffin's modification consists of treating the earlier cultures state-wide, in terms of "Paleo-Indian" and "Archaic Period," and the subsequent horizons by area and period. Undoubtedly the author felt that the scanty

data available for "Paleo-Indian" and the concentration of "Archaic Period" sites justified this handling. The reviewer feels, though, that much more data could have been obtained from unpublished sources and that a consistent approach would have emphasized the nature of the early occupations even more. The second cultural approach introduced in Florida archaeology, that of "Cultural Traditions," is not even mentioned. This concept would appear to have been a useful one for this particular volume where the emphasis seems to be placed on the broader interpretive picture, rather than a trait summary.

Nevertheless, having chosen his approach, Griffin handles it adequately. He avoids the inherent pitfalls of repetitive details in the "areas and periods" approach quite well, presenting the pertinent archaeological diagnostics and balancing them with interpretive discussion. He makes a significant new contribution with information he presents on his own work in early shell heaps. This greatly amplifies the existing knowledge of both preceramic and fiber-tempered horizons of the Archaic and for the first time in Florida reveals the existence of a plain pottery horizon underlying decorated fiber-tempered pottery.

Griffin carefully indicates in several places the importance of not relying too heavily on the rigid framework of areas and periods. In this the reviewer concurs, also agreeing with him that as long as this is kept in mind the framework is quite useful. Griffin's picture is a modification of similar earlier ones and the future will bring changes, too. Even in the last year we can see that certain concepts will have to be brought in line with data from new excavations and surveys. The greater importance of Deptford ceramics in many parts of the state and the wider range and importance of Orange period ceramics (if not culture) are examples.

Despite the basic over-all competence of this archaeological summary, there are a number of places in it where the reviewer disagrees with the author. Most are perhaps minor and others may be considered matters of interpretation. However, I would like to clarify two particular points.

In his consideration of "Paleo-Indian," Griffin states on page 323, "Goggin has published a paper in which he outlines a Sante Fe Complex consisting of several types of chipped stone artifacts which he believes to be early. He considers his Suwannee Points to be part of this complex, although they have not yet been found in association with the other tools." Actually, in the paper cited by Griffin, I stated that "The relation of Suwannee points to this [Santa Fe] Complex cannot be determined as yet." Furthermore, three possible relative datings of Suwannee Points were noted but no absolute decision was made as to which was the most probable. Lastly, the reviewer correlated the Santa Fe complex with Archaic cultures, not with paleo-Indian.

The reviewer differs, too, with Griffin's statement (page 328) that stratigraphic tests in the Glades area are at a minimum, unless the author means it in an absolute sense. Actually, the Glades area is possibly the most systematically known Florida area in terms of ceramic stratigraphy. The University of Florida in the last five years has made several excavations in one-period sites, as well as ten excavations, four as yet unpublished, yielding stratigraphy. These, coupled with previous work, give a total picture scarcely matched elsewhere in the state.

In a final concluding section, Griffin points out some of the major trends in both internal developments and external influences. The reviewer regrets that greater attention was not given to this section since Florida archaeology, because of its unique position and the relatively extensive work done, is now in a better position for interpretation and reconstruction than that of most states. This is an area with strong, and in places even intense, provincialism, yet to a greater or less degree it reflects many of the major cultural trends of the Southeast, although retaining its own individuality. Scarcely any period in any Florida region was without extra-Florida trade contacts, direct or indirect, as evidenced by raw materials or trade goods.

Undoubtedly one of the most useful aspects of Griffin's paper for the reader will be the series of excellent illustrations made from carefully chosen artifacts representing the main cultures of the state. They compare favorably with the best of the others in the book. These, together with the text, should make the chapter the most useful summary of the archaeology of Florida for the general reader.

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Culture Periods in Eastern United States Archeology, JAMES B. GRIFFIN; *Radiocarbon Dates for the Eastern United States*, JAMES B. GRIFFIN.

In this concise, well-written summary, Griffin draws together the information detailed in the preceding papers and gives meaning to the prehistory of the East. This story — of a length unsuspected a decade ago — is outlined under the headings: (1) Paleo-Indian, (2) Archaic, (3) Early Woodland, (4) Middle Woodland, and (5) Mississippi and Late Woodland. Distributions of components of each period are given in a series of maps (Figs. 199-204) and a chronological chart (Fig. 205).

I think that the alignments given are essentially correct. Minor readjustments will of course be necessary as the directions of distributions are discovered, for the picture given for each stage is essentially flat. I now suspect, as Griffin has insisted all along, that the principal direction of diffusion during the late Archaic, and early and middle Woodland was from north to south — a reversal of opinion, it will be noted, from alignments which Gordon Willey and I published in 1941.

The evidence for paleo-Indian occupation of the East, dating back perhaps 10,000 years, has accumulated to the point that cultures resembling those defined in the western portion of the country can be discerned — eastern relatives of Folsom and Yuma, as well as other assemblages that may be peculiar to this portion of the

continent. Griffin has readopted the use of the term "Archaic," and this useful concept will probably become standard for the archaeology of the East.

The Archaic is divided into an early and late phase; the first characterized by an absence of ground-stone forms, and the latter by the appearance of celts, boat stones, birdstones and banner stones, and other ground stone forms. This new suggestion for a division in the Archaic seems very useful and should assist in clarifying this phase of prehistory, especially the question of relationships to cultural stages of eastern Asia.

Early Woodland corresponds to the stage which Willey and I called Burial Mound 1. This stage has been clarified considerably in the last few years, particularly by the development of clear-cut chronology in the Hopewellian cultures of Illinois. Griffin states that at this time "There is no new cultural group which came in as a large body from the outside bringing significantly new cultural features, or producing a sudden violent change in the general way of life of the people of the area." The question is probably one of degree for there are indications that a number of significant new cultural items were added to the history of the East at this stage; and Griffin lists them very carefully. As the author states, it is now a commonly accepted idea that the nucleus of these traits — burial mounds, pottery, ornaments suggesting bear ceremonialism, etc. — probably came from Asia. If the majority of Ohio and Illinois Hopewell dates are correct and their suggestion may be accepted that early Woodland extends back to or before 500 B.C., the possibility becomes more probable.

The decline of Hopewell is followed by a period of rather drab Woodland cultures in portions of the upper Mississippi Valley. Griffin gives a brief sketch of the rise of the Mississippian culture and, except for an item of relative dating, I think he is correct. I think that the temple mounds in plaza arrangement, with the new organizational forces which they imply, were in the lower part of the Mississippi Valley in the Troyville period, not the later Coles Creek. How this trait got into the valley from Mexico is uncertain, but there is no mystery as to how the developing Mississippian cultural varieties of the central valley acquired it.

It is an interesting fact that the earlier temple mound groups seem to have served as religious centers for scattered populations while in the late Mississippian the populations tended to move in about the mounds which became the central features of small towns. A similar concentration of population at ceremonial centers can be seen in other histories. Griffin says that the "City-state" was not developed in the East. That is a matter of definition. Some of the fortified towns of eastern Arkansas might be considered as rather humble incipient city-states at least.

This too brief essay ends with three pages which outline the relation between the ethnological information of the historic period and the archaeology. This is a most promising and worthwhile aspect of Eastern archaeology that will become more feasible as information accumulates.

The paper dealing with radiocarbon dates lists those dates available for prehistoric Eastern cultures up to the date of publication. The listing is conveniently arranged by the cultural relationships of the sites represented. The discussion which follows has this same arrangement.

The discussion is mainly concerned with the evaluation of the dates in terms of archaeological sequences. The outlines of calendrical dates for the periods seem reasonable, but there are still a number of anomalous dates that must be regarded with suspicion. This may be corrected as larger numbers of radiocarbon dates become available. Griffin's discussion seems to be as fair and balanced as the present evidence will allow. It can only be improved upon with more dates and these will come with time — as he notes hopefully: "by time which heals all wounds."

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Early Man in America; A Study in Prehistory. E. H. SELLARDS. A publication of the Texas Memorial Museum. University of Texas Press. Austin, 1952. 211 pp., 47 figs., 8 restoration drawings. $4.50.

One of the fruits of Sellards' long interest in and study of fossil animal remains and associated objects attributable to human occupation is this recently published volume in which he summarizes not only the results of many of his own investigations but also the more outstanding examples of the work of others.

In the introduction there is a brief sketch of the development of the earth itself from the bare and naked state of earliest geologic time through the varying changes of succeeding eons with their accompanying procession of life, from primitive organisms to the most complex of plant and animal forms and eventually man himself. With respect to the latter Dr. Sellards adheres to the general concept that the origin was in the eastern hemisphere and that thus far only *Homo sapiens* has been recognized in the western half of the world with the time of his arrival still remaining an important problem. To help provide the proper background there is a discussion of geologic time divisions and an explanation of what in the present volume is meant by the term "Early Man." One section is devoted to the subject of age determinations with mention of the minerals used to date the older formations and a more extended discussion of the radiocarbon method of fixing the age of relatively recent deposits. The closing paragraphs of the Introduction are concerned with the conditions under which records of Early Man occur and are best preserved.

In his choice of Early Man manifestations for detailed descriptions, the author states that he has selected those which seem to him to be especially suitable for illustrating such features as "the conditions of occurrence, manner of preservation, age of deposits, types of artifacts, and development and succession of cultural

groups." For that reason numerous finds are mentioned only briefly and others merely are listed. The contents of the volume are arranged in several general categories. The first and most extensive is that of the "Hunters of the Plains." There are two main groups of the latter consisting of the Elephant Hunters and the Bison Hunters. Under the Elephant Hunters the finds of associated artifacts and mammoth remains at various localities in Texas, New Mexico, Colorado, Nebraska, Arizona, and the Valley of Mexico are discussed. To designate such remains the names Llano Complex and Llano Man, after the Llano Estacado or Staked Plains of Texas and New Mexico, are proposed, the one to indicate the assemblages of artifacts and animal bones and the other the people who made and used the implements. The Bison Hunters, of course, include Folsom Man and the various sites where so-called Folsom complexes have been found, Plainview Man, and other localities such as the Lime Creek sites in Nebraska, the Angostura remains in South Dakota, and the Horner site in Wyoming where somewhat comparable but not yet specifically named complexes occur. The latter include Eden and Scottsbluff type points as well as other forms commonly called Yuma and Dr. Sellards proposes that they together with the Plainview be grouped into what he calls the Portales Complex. This is based on the fact that the several forms were associated in the upper occupation level at one of the sites which he worked in the Blackwater Draw in the Portales-Clovis district in New Mexico.

The second general grouping is under the heading "The Cordilleran Mountain Belt." The sections there pertain to Gypsum Cave and the Leonard Rock Shelter in Nevada, the Sulphur Springs stage of the Cochise and Ventana Cave in Arizona, Sandia Cave in New Mexico, Fort Rock Cave in Oregon, and the Valley of Mexico. There may be some who will question the inclusion of Sandia Cave in this category because the bottom level manifestations there could well be referred to the Elephant Hunters, although perhaps not to the Llano Complex, while the intermediate stratum certainly belongs to the general Folsom series. The Sandia Mountains, to be sure, are part of the eastern fringe of the Mountain Belt, but in the present case it would seem that the cultural affinities would take precedence over the topographical. The chapter "The Atlantic and Gulf Coastal Plains" pertains to the finds in the vicinity of Natchez, Mississippi, the Vero-Melbourne localities in Florida with a discussion of analyses of fossil bones found there, and the Friesenhahn Cave and Kincaid Shelter in Texas. The section devoted to South American localities discusses Palli Aike Cave, Fell's Shelter, and the Confins Cave.

There are several, more general chapters which consider the subjects of markings on stone and bone, the origin of the American cultures, the large mammals of the Late Pleistocene and the time of their extinction, and age determinations of certain cultural complexes based on radiocarbon tests. They are followed by an extensive list of the localities where Early Man finds have been made and an index to the literature pertaining to them. In conclusion Dr. Sellards offers some general considerations wherein are discussed the progress of the last century in this particular field of study and possibilities for the future.

Because of the scope of his subject and the large number of discoveries involved Sellards has been content in most cases to summarize the essential features of each without attempting to present minute technical details concerning geologic phenomena, the kinds of animals, and the types of artifacts found. For the latter he relies in the main on illustrations, rather than written descriptions. However, his discussion of the deposits at the Miami locality in Texas and Blackwater No. 1 locality in New Mexico provides the necessary basis for understanding the occurrences there and their significance. This is particularly true of the New Mexico site which is extremely important because of the stratigraphic sequence in which Clovis fluted points are present in the bottom level, Folsom fluted in the intermediate horizon, and the Portales group of Eden, Scottsbluff, Plainview, and related forms in the top occupation layer. Because of the method of organization of the material and the fact that the Clovis fluted are considered in the section devoted to the Llano Complex, the Folsom horizon at Blackwater is presented in the chapter on the Bison Hunters, and the Portales Complex is discussed in a later portion of the same chapter the full import of the sequence may not be fully appreciated by some readers. The discovery of that occurrence is a definite contribution. The chapter on the large mammals of the Late Pleistocene and the possible time of their extinction will be helpful to those who are not familiar with the subject. The series of restoration drawings of the Columbian elephant, the early American Bison, the dire wolf, the native horse, the American camel, the North American ground sloth, the great tiger, and the North American tapir which are scattered through the book will be particularly instructive to many who know such creatures only by name or from mounted skeletons in museums. Mr. Story, who drew them, also prepared the maps for North and South America showing the approximate locations of the more important finds and the many text figures illustrating artifact types.

Sellards' book provides an interesting introduction to the subject of Early Man in America and should give the general reader an appreciation of the problems involved in the effort to recover his story. Archaeologists and students desirous of more specific details about the types of artifacts and the conditions under which they occurred will find Dr. Sellards' list of localities and index to the literature an extremely useful aid in learning the sources for information. The list and accompanying bibliography combine those previously published in Bulletins of the Geological Society of America and continues them through 1951. Workers in the field certainly owe Sellards a vote of gratitude for providing them with so convenient and comprehensive a listing of reference materials.

Frank H. H. Roberts, Jr.
Bureau of American Ethnology
Washington, D.C.

ANNUAL MEETING OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY, 1953

The eighteenth annual meeting of the Society for American Archaeology was held on Thursday, Friday, and Saturday, May 7, 8, and 9, 1953 at the Illini Union building on the University of Illinois campus, Urbana, Illinois. This meeting was held in conjunction with the twenty-ninth annual meeting of the Central States Anthropological Society. Registration at the joint meetings was 169, but the total attendance was close to 200.

MEETING OF THE EXECUTIVE COMMITTEE

As required by Article VI, Section 3 of the Constitution of the Society, the annual meeting of the Executive Committee was held prior to the annual business meeting of the Society. An account of the meeting of the Executive Committee is included in the report of the Secretary.

ANNUAL BUSINESS MEETING

The annual business meeting of the Society was called to order by President Irving Rouse at 4 p.m. on Saturday, May 9, 1953. Approximately 65 members were present.

The minutes of the seventeenth annual meeting were approved as published in *American Antiquity*, Vol. 18, No. 2, pp. 185-188 (October, 1952) with the inclusion of the name of James B. Griffin as newly elected Secretary.

The report of the Secretary was read and accepted (see p. 193 for this report.)

The report of the Treasurer was read by Richard B. Woodbury acting for Treasurer George F. Will, and accepted on the recommendation of the Auditing Committee (John Rinaldo, Chairman; Glenn A. Black; and Richard B. Woodbury).

The 1953-1954 Budget as approved by the Executive Committee was presented for the information of the membership (see p. 196 for a statement of the Budget).

The report of the Elections Committee was read by the Chairman, James B. Griffin, and accepted. The results of the mail ballot (338 acceptable ballots were received) were as follows:

President: Gordon F. Ekholm

First Vice-President: George I. Quimby

Second Vice-President: Isabel Kelly

Treasurer: Richard B. Woodbury

Members of the Executive Committee: Carl Chapman (to 1955), Erik K. Reed (to 1955).

The report of the Editor was read and accepted (see p. 196 for this report).

The report of the Viking Fund Award Committee was presented by Irving Rouse, who announced that the Committee had selected Dr. Alfonso Caso to be the 1952 Viking Fund Medalist.

No invitations for the 1954 annual meeting of the Society for American Archaeology were received. The Executive Committee suggested that the annual meeting for 1954 should be held in the east.

It was moved, seconded, and approved by unanimous voice vote that Article II, Section 2 of the By-Laws be amended to read as follows:

BY-LAWS

The names of the members of the Nominating Committee and their addresses for any given fiscal year shall appear in the second number of Antiquity for that year, following the minutes of the Annual Meeting for the preceeding year. There shall also be a listing of the vacant offices for which nominations will be made for the ensuing year with a notice that members may suggest the names of candidates for such offices to the Nominating Committee before December 1. For the offices of Secretary, Treasurer and Editor the Nominating Committee shall nominate a member candidate. For the other offices the Nominating Committee *may nominate no more than three member candidates.* All prospective nominees must indicate in writing to the Nominating Committee their willingness to serve as an officer subject to the provision of the Constitution, Article V, Section 4. The list of nominees shall be sent to the Secretary by March 1 for distribution to the individual members of the Society in accord with the provisions of Article II, Section 4 of the By-Laws.

The following resolutions were presented by the Committee on Resolutions (Melvin L. Fowler, Chairman and Dr. P. F. Titterington) and accepted:

Resolved: That the Society for American Archaeology express its appreciation and thanks to President Stoddard of the University of Illinois and to the Department of Sociology and Anthropology for their hospitality and particularly for the opportunity of holding the annual meeting in the impressive Illini Union building.

Resolved: That the Society for American Archaeology express its thanks to Dr. John C. McGregor and other members of the Local Arrangements Committee.

Resolved: That the Society for American Archaeology express its gratitude to the Program Committee of J. Charles Kelley, William H. Sears, and Carlyle Smith for the agreeable and effective manner in which notice of the meeting was given and operation of the program and integration with the Central States Anthropological Society was carried out.

Resolved: That the Society for American Archaeology express its deep sense of loss in the death of Karl Schmidt, Tully Thomas, A. T. Hill, J. L. Kraft, Paul Reiter, and Oliver Ricketson and that the Secretary be instructed to convey to their survivors the sympathy of the Society and to send them a copy of this resolution.

Resolved: That the Society for American Archaeology express its appreciation to George Will for his two-year's term as Treasurer.

NEW BUSINESS

Jesse D. Jennings called the attention of the Society to the serious cut in the item for archaeology and history listed under the Interior Department appropriation bill for the Missouri River Basin. After some discussion the Society for American Archaeology unanimously adopted the following resolution which was sent by President-elect Ekholm to the chairman and to the members of the Senate Sub-Committee on appropriations for the Department of the Interior. A detailed accompanying

letter was also sent to the chairman of the subcommittee.

Resolved: The Society for American Archaeology has learned with deep concern of the drastic cut which has been made in the item in the Missouri Basin Allocation Fund of the Department of the Interior appropriation bill providing funds for the recovery of historical, archaeological, and paleontological materials from areas which will be flooded by dams now under construction in the Missouri Basin.

While the Society appreciates the need for, and is in sympathy with, the present economy move, it nevertheless believes that the small saving involved is out of all proportion to the irretrievable loss to knowledge of New World history which will result.

The Society, therefore, wishes to go on record as respectfully urging the restoration of the item to the sum recommended by the Bureau of the Budget.

The annual business meeting adjourned at 4:45 p.m.

ANNUAL DINNER

The annual dinner of the Society for American Archaeology and the Central States Branch of the American Anthropological Association was held in the banquet room of the Illini Union building, Illinois University campus at 6:00 p.m. on Friday, May 8. After the dinner there was a joint meeting in the Faculty Lounge during which a report and discussion was given on "The Problem of Archaeological Publication and the *American Anthropologist*" by Sol Tax, Jesse D. Jennings and others.

OTHER SESSIONS

Thursday, May 7 — Afternoon Session. General Session: Symposium on Methodology in Archaeology. Chairman: James B. Griffin.

Introductory remarks by the Chairman.

1. Albert C. Spaulding, "Archaeological Classification."
   Discussant: J. Charles Kelley.
2. Alex D. Krieger, "Determination of Ranges of Variation in Types."
   Discussant: Robert L. Stephenson
3. Carlyle S. Smith, "The Sequence at the Talking Crow Site: Continuity or Discontinuity."
   Discussant: Jesse D. Jennings
4. John C. McGregor, "Archaeological Method."
   Discussants: John M. Goggin, John Corbett
5. Irving Rouse, "The Use and Abuse of the Concept of Areal Co-Tradition."
   Discussants: Hiroshi Daifuku, John Rinaldo
   General discussion of methodology in archaeology

Evening Session. Special Work Session. Archaeological Classification and Archaeological Horizons.

First Discussion: Projectile Points as Horizon Markers
Session Leader: John Rinaldo

Second Discussion: The American Mesolithic
Session Leader: William G. Haag

Friday Morning, May 8. Joint Session (CSAS and SAA).

Welcoming Address

Symposium on Cultural Ecology, Chairman, David A. Baerreis

1. Richard V. Bovbjerg, "The Concept of Ecology in Biology."
2. Waldo R. Wedel, "Some Aspects of Ecology in the Central Plains."
3. John L. Champe, "Some Unsolved Ecological Problems of the Central High Plains."
4. Preston Holder, "Some Implications of Differential Ecological Adaptations in the Northern Plains."
5. Donald Collier, "Ecology of Local Groups Among Historic Tribes of the High Plains."
6. Julian Steward, "The Concept and Method of Cultural Ecology."
   Discussants: Volney H. Jones and Irving Rouse

Friday Afternoon, May 8. General Session — Contributed Papers. Chairman: William H. Sears.

1. Waldo R. Wedel, "The Cody Complex."
2. Reynold J. Ruppe, Jr., "The Archaeology of Acoma Pueblo."
3. L. S. Cressman, "Oregon Coast Prehistory: Progress Report."
4. David Gebhard, "Torrey Lake Site, Wyoming."
5. Theodore P. Banks, "Cultural Succession in the Aleutians."
6. Douglas Leechman, "The Pictographs of Southern Alberta."

Saturday Morning, May 9. General Session — Contributed Papers. Chairman: Carlyle Smith.

1. Robert L. Stephenson, "Accokeek: A Middle Atlantic Seaboard Culture Sequence."
2. William H. Sears, "A Late Archaic Horizon on the Atlantic Coastal Plain."
3. Charles H. Fairbanks, "Mound C. Macon."
4. A. R. Kelly, "North Georgia Copena Cave Burials."
5. James H. Kellar, "The C. L. Lewis Stone Mound, Shelby Co., Indiana."
6. William J. Mayer-Oakes, "The Clover Complex, A New Fort Ancient Unit."
7. Don W. Dragoo, "The Johnston Site, A Late Prehistoric Village in the Upper Ohio Valley."
8. James B. Griffin, "The Cultural Sequence in the Cahokia Area."
9. Edward G. Scully, "The Cultural Sequence in the Southern Central Mississippi River Valley."
10. Joe Bauxar, "Ethnohistorical Generalizations Relative to the Protohistoric Archaeology of the North Central States."

Saturday Afternoon, May 9. General Session — Contributed Papers. Chairman: Jesse D. Jennings.

1. Douglas S. Byers, "The Bull Creek Site — A New Fluted Point Site from Eastern Massachusetts."
2. William E. Edwards, "Early Man in Florida."
3. Alex D. Krieger, "Are Fluted Points of Asiatic or American Origin?"
4. Michael Steward, "Excavations at Benque Viejo."
5. J. Charles Kelley and William J. Shackelford, "The Weicker Site, Durango, Mexico."
6. Kenneth E. Kidd, "Techniques in Trade Goods Research."
7. E. F. Greenman, "On Digging a Workshop Site."

Special Work Session. Pottery of the Eastern United States: Organizing Committee: William J. Mayer-Oakes, Chairman; Don W. Dragoo, Alfred K. Guthe.

REPORT OF THE SECRETARY

Committees. The following committees were appointed by President Irving Rouse and approved by the Executive Committee as required by the Constitution and By-Laws of the Society.

Nominating Committee: Junius Bird, Chairman; William A. Ritchie; and Robert Wauchope

Viking Fund Award Committee: Irving Rouse, Chairman Ex Officio; Donald Collier; Philip Drucker; Carl E. Guthe; Emil W. Haury; Richard S. MacNeish; Hallam L. Movius; George I. Quimby; Erik K. Reed; Albert C. Spaulding; Richard B. Woodbury.

Program Committee: J. Charles Kelley, Chairman; William H. Sears; and Carlyle S. Smith.

Elections Committee: James B. Griffin, Chairman; Emerson F. Greenman; and Volney H. Jones.

Auditing Committee: John B. Rinaldo, Chairman; Glenn A. Black; and Richard B. Woodbury.

Committee on Local Arrangements for Eighteenth Annual Meeting: John C. McGregor, Chairman; W. J. Beeson; and W. E. Taylor, Jr.

Committee on Resolutions: Melvin L. Fowler, Chairman; and P. F. Titterington.

OTHER ACTIVITIES

A special meeting of the Society for American Archaeology for nonbusiness purposes was approved for the Christmas meeting, 1952, of the American Association for the Advancement of Science in St. Louis. The meeting was in conjunction with Section H. Thorne Deuel was appointed as the delegate from the Society to the A.A.A.S. Another special meeting was held in conjunction with the American Anthropological Association in Philadelphia during the Christmas, 1952, holidays. Gordon R. Willey was named as representative.

The Executive Committee accepted the invitation of the University of Illinois to hold the eighteenth annual meeting at Urbana, May 7 to 9, 1953. The invitation made on behalf of Washington University was declined with regret.

Notice of the place and date of the annual meeting and an invitation for papers, symposia, or special work sessions, was mailed to the membership in late October, 1952. The program of the meeting was mailed to members the middle of April, 1953.

George Will, who was elected Treasurer in 1951, resigned due to the pressure of his business, so that election of a new treasurer was included in this year's balloting. During the year the Executive Committee approved turning over to the Secretariat office of the American Anthropological Association responsibility for collecting the annual dues. The Treasurer of the Society will remain responsible for deposits and disbursements, the preparation of the financial statement and the budget.

The Nominating Committee presented the following names for the consideration of the members: for President — Donald Collier, Gordon Ekholm, Robert Heizer; for First Vice-President — George Brainerd, George Quimby, William A. Ritchie; for Second Vice-President — Pedro Armillas, Isabel Kelly, John Witthoft; for Treasurer — Richard Woodbury; for Executive Committee, First Position — Carl Chapman, William Haag, Carlyle Smith; for Executive Committee, Second Position — Philip Drucker, Douglas Osborne, Erik Reed.

The Secretary's office maintained the membership files and conducted a membership drive with the active assistance of some 20 individuals of the 47 requested to help. A statement of need for new members was prepared with the gracious assistance of the Editor, printed and distributed, as a separate, in American Antiquity, Volume 18, Number 2. New members were sent a personal letter by the Secretary accepting their $6 and with an expression of appreciation on behalf of the Society. A mimeographed list of available back numbers of American Antiquity was sent to many of the new members. A statement of membership according to the Treasurer's records appears in the Annual Report of the Treasurer. Records in the Secretary's office indicate that about 120 new members were added during the year. The membership drive will be continued by the Secretary's office.

As required by Article VI, Section 3 of the Constitution, the annual meeting of the Executive Committee was held on May 7. The Executive Committee took the following actions:

1. Approved the minutes of the 1952 meeting as printed in American Antiquity, Vol. 18, No. 2.

2. Accepted the Secretary's report, and that of the Treasurer, subject to the action of the Auditing Committee.

3. Accepted the Editor's report.

4. Received the budget for 1953-1954 as prepared by the Treasurer and authorized its revision by the editor and the incoming Treasurer for submission to the Business meeting.

5. Discussed publication problems resulting from a 10 per cent increase in printing costs which will begin with Volume 19. As a result of price reductions on some of the Memoirs it was possible to reduce the inventory. This policy will be continued and applied to other Memoirs. Joint Memoir publication with other anthropological organizations such as the American Anthropological Association was considered as a future possibility. Another possible development in collaboration with other organizations could be a permanent editorial office to handle mechanical editorial work. The President-elect was requested to investigate this matter further with the Secretariat office of the American Anthropological Association.

6. Approved the submission to the business meeting of an amendment to the By-Laws governing the election of officers.

7. Approved the submission to the membership during the fiscal year 1953-1954 of an amendment to the Constitution which will include the Second Vice-President as a member of the Executive Committee.

8. Approved continuation of the distinction between members and subscribers.

9. Approved affiliation of the Society for American Archaeology with the American Association for the Advance of Science.

10. Approved the proposal to have the Society for American Archaeology act as a sponsoring society for the establishment of the Council for Old World Archaeology and nominated Irving Rouse as the Society for American Archaeology delegate and charter member.

11. Since no invitations for a meeting place for 1954 were submitted to the Executive Committee action with regard to the meeting was left for the next year's busi-

ness with the recommendation that the meeting be held in the eastern part of the country if possible.

12. An excellent report concerning procedures for the Program Committee was submitted by J. Charles Kelley. This was approved in principle and will be submitted to subsequent Program Committees as a guide.

13. Waldo Wedel and Frank H. H. Roberts, Jr. were appointed a sub-committee to prepare a statement in regard to the qualifications of professional archaeologists for consideration during the year by the Executive Committee. Such a statement will be read at the next annual business meeting for approval of the Society.

REPORT OF THE TREASURER FOR THE FISCAL YEAR ENDING APRIL 30, 1953

BUDGET FOR 1953-1954

ESTIMATED EXPENSES

Publishing 4 issues of *American Antiquity*	$ 7,000.00
Editor's expenses	700.00
Second class postage for distributing *American Antiquity*	50.00
Other postage, including distribution of reprints	100.00
President's expenses	25.00
Secretary's expenses	50.00
Treasurer's expenses	100.00
Annual charge for billing and collecting dues	300.00
Annual meeting expenses (local arrangements and program committees)	100.00
Emergency Subsistence allowance at annual meeting for President, Secretary, Editor, and Treasurer, not to exceed $25.00 per individual	100.00
Moving treasurer's office	25.00
Establishing billing and collection agency for annual dues	150.00
Balance carried forward	2,554.21
Total	$11,254.21

ESTIMATED RECEIPTS

Balance brought forward	$ 2,654.21
Dues from 1175 members at $6.00 each	7,050.00
Sale of back issues of *American Antiquity*	300.00
Payments for reprints and excess engraving charges	1,000.00
Collections on accounts	250.00
Total	$11,254.21

BALANCE SHEET APRIL 18, 1953

ASSETS

Current Assets:		
Cash in Bank — General Fund	$ 1,682.02	
Cash in Bank — Planning Committee	972.19	$ 2,654.21
Publication Fund — Savings Account		1,598.67
Permanent Fund — Savings Account		646.66
Estimated Accounts Receivable		253.95
		$ 5,153.49

LIABILITIES

Prepaid Dues		$ 84.00
Restricted Funds:		
Cash in Checking Account Reserved for Planning Committee	$ 972.19	
Permanent Fund — Savings	646.66	1,618.85
Net Worth		3,450.64
		$ 5,153.49

RECONCILEMENT OF BANK APRIL 18, 1953

Balance per Bank Statement, April 18, 1953			$ 4,073.06
Outstanding Checks:	Number	Amount	
(Prior Year Audit)	5	$ 10.00	
	78	3.50	
		8.80	
	106	1,280.00	
	107	35.55	
	108	4.62	
	109	36.38	
	110	40.00	1,418.85
Balance per Books			$ 2,654.21

STATEMENT OF RECEIPTS

For the Period from May 1, 1952 to April 18, 1953

Received Dues Current and Prior Years	$ 7,037.90	
Sale of Memoirs and *Antiquity*	879.90	
Reprints	786.02	
Engraving	428.75	
Grant from Wenner-Gren Foundation for Publishing Memoir No. 9 (American Association for Advancement of Science)	1,000.00	
Total Receipts		$10,132.57
Balance brought forward		1,774.51
Total Receipts		$11,907.08
Total Expenditures — Schedule No. 1		9,252.87
Balance per Bank Reconcilement, April 18, 1953		$ 2,654.21
Recapitulation:		
General Operating	$ 1,682.02	
Planning Committee Fund	972.19	
Total as Above		$ 2,654.21

STATEMENT OF EXPENDITURES

For the Period from May 1, 1952 to April 18, 1953

Publishing *American Antiquity* and Other Printing:		
Printing		$ 7,682.77
Editor's Assistants		760.11
Stenographic Expense		295.81
Secretary's Expense		35.00
Files and Statements	$ 4.39	
Express	9.24	
Postage	310.75	
Letterheads	47.25	
Telephone	7.35	
Audit (2 Years)	80.00	
Refunds	20.00	
Exchange	.20	479.18
Total Expenditures		$ 9,252.87

REPORT OF THE TREASURER APRIL 18, 1953

Permanent Fund:		
Balance forward, April 24, 1952		$ 637.09
Interest, March 31, 1952 to March 31, 1953		9.57
Balance in Account, April 18, 1953		$ 646.66
Publication Fund:		
Balance forward, April 24, 1952		$ 1,574.95
Interest, March 31, 1952 to March 31, 1953		23.72
Balance in Account, April 18, 1953		$ 1,598.67

BUDGET FOR 1953-1954

Estimated Expense

Publishing *American Antiquity* and Memoirs		$ 7,800.00
Planning Committee — Account		972.19
Editor's Assistance	$ 750.00	
Editor's Secretary	100.00	
Editor's Expenses	50.00	900.00
Treasurer's Assistance	$ 225.00	
Postage and Express	325.00	
Printing and Stationery	60.00	
Exchange	5.00	
Sundry Income and Balance Forward	677.02	1,292.02
		$10,964.21

Estimate of Income

Balance Forward		
Working Fund	$ 1,682.02	
Planning Committee	972.19	$ 2,654.21
Estimated Income from Dues:		
1110 @ $6.00		6,660.00
Sale of *American Antiquity*		500.00
Collections on Accounts		250.00
Other Sundry Sales and Receipts		400.00
Payments and Reprints		500.00
		$10,964.21

ACCOUNT OF MEMBERSHIP

For the Period from May 1, 1952 to April 18, 1953

Item	*Active*	*Institutional*	*Life*
May 1, 1952	809	230	11
Net Increase or Decrease	82	(6)	(1)
Total, April 18, 1953	891	224	10
Grand Total	1125		
Members Prepaid 14			

REPORT OF THE TREASURER

I hereby certify that the within report includes all receipts and disbursements for the Society for American Archaeology and that the books and records are in accordance therewith.

GEORGE WILL, *Treasurer*

ANNUAL REPORT OF THE EDITOR

During the current year, we have published a total of 424 pages in *American Antiquity* and a Memoir (No. 9) containing 104 pages — a total of 528 pages, 40 more than in Volume 17 and Memoir combined. Due to generous subsidy for the Memoir, we were able to provide this much material at very slight additional cost. However I have just received notice that printing costs will go up approximately 10 per cent beginning with Volume 19, Number 1. This increase in cost is long overdue. I hope that our membership drive and the occasional gifts from outsiders will permit the offering to remain as large as it has been the past year.

Volume 18 contained 27 major articles, two obituaries, 36 Fact and Comment articles, 29 book reviews, 26 book notices, as well as all the other regular features, except the membership list, which is being held for publication alongside the account of the annual meeting in Volume XIX, No. 2, 1953.

I received a total of 74 manuscripts of which 4 were rejected and 12 were returned for modification. Six of the latter were accepted after revision. There are enough manuscripts on hand now for about two-and-one-half issues, including the July issue now in press.

Personnel changes include the resignation of Erik K. Reed as Associate Editor; he was succeeded by Albert C. Spaulding. Carroll Burroughs resigned as Assistant Editor for the Pacific Coast. Malcolm Farmer followed him. I would like to take this opportunity to thank Erik K. Reed and Carroll Burroughs for their effective and cheerful work on the editorial staff. Let me also thank the men who are finishing out the term.

* * *

Herewith are listed, pursuant to the requirements of the By-Laws, Article II, Section 2, as amended (p. 192), the names and addresses of the nominating committee for 1953-1954: William G. Haag (chairman), Dept. of Geography, Louisiana State University, Baton Rouge, La.; Glenn A. Black, Newburgh, Ind.; John M. Corbett, 1023 Potomac Ave., Alexandria, Va.

The seven offices to be filled during 1953-1954 for 1954, are: President, First Vice-President, Second Vice-President, Secretary, Editor, and two Executive Committee Members.

NOTES AND NEWS

PACIFIC COAST

William J. Wallace reports considerable progress in the survey of Death Valley National Monument, conducted as a cooperative project between the University of Southern California and the National Park Service. The first three field trips resulted in the location of 123 sites and the recognition of three distinct cultures. Two of the cultures are apparently associated with Pleistocene Lake Manly, and the other consists of remains of recent tribes. Continued surveys of the area were planned for the summer. Wallace also reports continued research in Little Sycamore Canyon, Ventura County. A field class in archaeological methods excavated a rock shelter containing 10 feet of stratified deposits. Small points, mortars and pestles were found in the upper level with milling stones and large points coming from the lower part of the deposit. Additional sites were located, including one containing crude core tools not unlike those from the Tank site in Los Angeles County.

The Archaeological Survey Association of Southern California has been conducting exploratory excavations of a large site near Deep Creek, San Bernardino County, under the direction of G. A. Smith of the San Bernardino County Historical Society. The Association also conducted surveys of the Black Canyon area, San Bernardino County, locating a number of sites including several small rockshelters. The surveys were under the direction of David Rice, President of the Association.

Clement W. Meighan, University of California at Los Angeles, led a crew of five students in the excavation of a pre-pottery site near Pala in northern San Diego County. Since the area has both pottery and non-pottery sites, he was hopeful of working out a stratigraphic sequence for the region. During the month of August, Meighan led a crew working in collaboration with the University of California Archaeological Survey in conducting archaeological surveys in Mono County, eastern California.

Robert F. Heizer reports that the University of California Archaeological Survey carried out a number of field trips during the spring. A second visit to a cave in Tehama County which was the scene of a massacre of Yana Indians in 1871, and numerous brief excursions to sites being destroyed in land leveling operations were made. A reinvestigation of the Farmington area was conducted, and the conclusion was reached that the Farmington Complex (announced in University of California, Archaeological Survey, Report 14) is of Anathermal age, thus making it the oldest California culture occurring in stratigraphic position. Summer projects included excavations at Sonoma Mission, Fort Ross, Nimbus and Redbank Reservoirs, Yosemite Valley, and Pit River. These excavations were supported by the University of California Archaeological Survey, the National Park Service, and the California State Division of Beaches and Parks. Continued work in the high Sierra Nevada area by Assistant Archaeologist of the Survey, A. Elsasser, was planned for the summer.

Aubrey Neasham, former historian for the National Park Service, Region Four, has become historian for the California State Park Service, and prospects are good for archaeological investigations of state-owned areas, including a state-wide study of sites which warrant acquisition and preservation by the State.

The University of Washington conducted several archaeological projects during the summer under the supervision of Douglas Osborne. Earl Swanson, a graduate student, led a crew in the excavation of a number of caves along the Columbia River above Vantage Ferry. Warren Caldwell, also a graduate student at the University of Washington, was in charge of excavations at the important Wakemap mound site on the Columbia River in the Dalles Reservoir area. The work was carried on under a contract with the National Park Service. Alan Bryan, another University of Washington graduate student, worked through the spring on an archaeological survey of Whidby Island and adjacent areas of Puget Sound. He planned to spend the summer testing two large sites on Whidby Island. A University of Washington crew planned to continue excavations at the historical Spokane House site during the latter part of the summer.

William Massey spent the summer in teaching and research at the joint field school conducted by the University of Washington and the Escuela Nacional de Antropologia e Historia of Mexico in Baja California.

Under the direction of Luther Cressman, in collaboration with the National Park Service, the University of Oregon conducted archaeological salvage operations during the summer along the Oregon side of the Columbia River within the Dalles Reservoir area.

Members of a summer field school in archaeology from the State College of Washington conducted extensive testing excavations in a large cave located near the mouth of the Palouse River, Franklin County. Under the direction of Richard D. Daugherty, efforts were directed towards establishing a stratigraphic cultural sequence for the area.

The Sixth Annual Northwest Anthropological Conference was held at the State College of Washington on May 2. A number of papers on current archaeological research in the Northwest were presented. A limited number of copies of the proceedings of the conference are available upon request; write to Richard D. Daugherty, Department of Sociology and Anthropology, State College of Washington, Pullman. Wayne Suttles of the University of British Columbia was elected chairman of the conference for 1954.

PLAINS

The Missouri Basin Project of the Smithsonian Institution has suffered such a severe reduction in funds for the current fiscal year that the staff has been cut 60 per cent. Some intensive survey work in the Fort Randall and Oahe reservoirs in South Dakota is planned. No large scale excavations are planned for this year.

In June, Robert Cumming led a Smithsonian party to the construction area of the Tuttle Creek Dam near Manhattan, Kansas. Two surface sites, 14P012 and 14P013, on the axis of the dam were sampled. A burial mound of earth and stone, 14P014, was completely excavated. Pottery and projectile points indicate Woodland cultural affiliation. Extended and semi-flexed skeletons were found, one in a pit and the others in the fill. A village site, 14RY10, also in the construction area, was tested. Operations ceased on June 30 with the end of the fiscal year.

In July, Lynwood Hodgen of Kansas State College returned to site 14RY10 with a volunteer crew composed of Mary Kiehl and Ray Wood of the University of Nebraska, Lee Madison and Frank Brown of the Missouri Basin Project, Harold Husher of Columbia University, and other students from Kansas State College. One earth lodge containing an artifact inventory typical of the Upper Republican aspect was excavated.

Ted White and a party of two carried on paleontological work at the Canyon Ferry Reservoir, Montana, in June. White also continued his study of the butchering techniques used by the occupants of village sites in the large reservoir areas along the Missouri River.

The rest of the Smithsonian staff spent the spring and early summer writing final reports on the excavations of past seasons in the Garrison, Oahe, Fort Randall, Angostura, Boysen, Keyhole, and Jamestown reservoirs. Robert L. Stephenson, Acting Chief of the Missouri Basin Project, made two inspection trips through the Missouri Basin to visit the digs being run by cooperating agencies and to check on the nature of some of the sites likely to be flooded in the near future. Site 39CH5 in the Fort Randall Reservoir, partially excavated last season, is already under water. Additional excavations would have been carried on at the site this year if funds had been forthcoming.

The National Park Service, pending funds and construction schedules, is planning to do a small amount of work in the Sanford Reservoir on the Canadian River, north of Canyon, Texas. Edward B. Jelks made a survey of the Strawn and Toronto reservoirs in southeastern Kansas and carried on excavations in Falcon Reservoir on the Rio Grande in Texas. Cooperative agreements were made with the State Museum, University of Nebraska, with the Museum of Natural History, University of Kansas, and with the W. H. Over Museum, University of South Dakota.

The University of Kansas field party spent eight weeks in the Fort Randall Reservoir, South Dakota, testing three sites and carrying on intensive investigations at a fourth. Carlyle S. Smith was assisted by Roger Grange for the season. At site 39LM39, near the mouth of the White River, two log structures dating from the last quarter of the 19th century were excavated. Worked catlinite, glass beads, dentalium shells, and metal objects indicate that the occupants of the site were Dakota, or white men engaged in trade with them. At site 39LM33 test trenches were dug in two depressions and a mound. The depressions marked the remains of long rectangular houses and the mound an accumulation of refuse over an area containing cache pits. The artifacts and the nature of the houses indicate that the site is a component of the Over focus. At site 39LM55 test trenches revealed cache pits and a house containing artifacts similar to those found at the Thomas Riggs site in Oahe Reservoir.

Smith's party found a hitherto unrecorded site, 39LM301, just below the mouth of the White River. The location of the site on a low, partially wooded terrace within an old meander of Bull Creek suggests a winter village. Preliminary tests located a rich refuse deposit which upon excavation yielded over 12,000 potsherds, many of them displaying relationships to the La Roche site, Component C at Talking Crow, the Randall component at Scalp Creek, and to the Lower Loup focus. Extensive trenching and test pitting resulted in the finding of a round earth lodge under a barely perceptible mound. No houses could be found in any of the hollows thought at first to be house sites.

The University of South Dakota carried on excavations for six weeks at sites 39HU43 and 39HU26, an area otherwise known as the Spotted Bear site, in Peoria Bottom, Oahe Reservoir, South Dakota. The project was supervised by Wesley R. Hurt who was assisted by Todd Willy. The first area excavated, 39HU43, disclosed the remains of a late 19th century Dakota village. Cross trenches were dug through several tipi floors. A cache pit containing the skeleton of an adolescent was found. A thin occupational level containing cultural material of the kind found at site 39HU26 was found below the Dakota village.

At site 39HU26 Hurt's party excavated five houses, two large exterior cache pits, and other features. The houses are round earth lodges in which the roof timbers rested on the edges of the pits instead of on wall posts. A bundle of eight fishhooks, each of a different size was found. The pottery represents a transition between Talking Crow ware and Stanley Braced Rim ware. The presence of an iron projectile point, a brass needle, a copper jingle, and a few other objects of metal indicate the beginnings of French trade, possibly around 1725.

Marvin F. Kivett spend most of the summer moving into the new Nebraska State Historical Society Museum adjacent to the campus of the University of Nebraska. Some time was spent testing sites along the Platte River and at the site of Fort Atkinson, 1819-1827, north of Omaha.

The 11th Plains Conference for Archaeology will be held at the Laboratory of Anthropology, University of Nebraska, November 26-28, 1953, with E. Mott Davis as chairman.

NORTHERN MISSISSIPPI VALLEY

ILLINOIS. Howard Winters and John Buettner-Janusch, both graduate students of the University of Chicago, and a group of eleven others are excavating the rockshelter near Modoc in Randolph County tested last summer by the Illinois State Museum-University of Chicago

Field Party. The Illinois State Museum, the University of Chicago (Anthropology), members of the Illinois State Archaeological Society, other institutions, and individuals are supporting the project. Recent tests yield archaeological flints and charcoal to a depth of nearly 30 feet.

There seem to be changes in flint types from the lowest levels to the surface. Special studies under Professor Matson (of Pennsylvania State College) and others will be carried on at the site (1) with reference to new techniques for recovering carbon from archaeological sites for use in radiocarbon dating and for comparison with results by tested techniques, (2) soil analysis using recently developed techniques, and (3) application and development of infra-red photography, especially in relation to soil strata.

Studies of the material and preparation for publication of a report on the project and findings will be made by Winters and Janusch at the Illinois State Museum in Springfield this fall.

J. Joe Bauxar and M. L. Fowler, Curator of Anthropology of the Illinois State Museum, are continuing to study the LaSalle County material attributed to Illini Confederacy and plan to complete it by September.

INDIANA. The Archaeological Field School at Angel Mounds, sponsored by the Indiana Historical Society and Indiana University, began on June 15th. Since the 17th the group has been working on a burial site near the village of Yankeetown in Warrick County. To date (July 16th) several burials have been found — some in slate and sandstone slab-lined graves — others in trench-like graves containing secondary burials in mass deposits. The characteristics displayed are at variance from norms previously established for several of the complexes involved in this part of Indiana. Unfortunately, material culture is conspicuous by its absence so that we can not be sure of which complex these burials are a part.

J. C. Householder and Downey Raibourn are excavating a portion of a mixed Woodland-Fort Ancient Site north of Indianapolis.

James Kellar is making a surface survey of Perry County, Indiana. This area is distinguished by rough terrain and numerous overhanging rock shelters. So far, the results are at variance to a certain degree with materials found by him during the past two years in the adjoining county to the west. This fact probably is a reflection of the marked difference in natural environment between the two areas.

WISCONSIN. The Wisconsin Archaeological Survey, under the supervision of David A. Baerreis, has conducted excavations at two sites being destroyed by sand and gravel pit operations. In Fond du Lac County, work at the Schmitz site disclosed the presence of a rectangular, subfloor burial pit beneath a mound. Grave goods included pearl and shell beads in small quantities. Cranial deformation was noted on some skulls. A more productive cemetery in Winnebago County, the Reigh Site on Lake Butte des Morts has yielded over 25 burials of a variety of types including primary, secondary and cremation. Burial positions include both extended on the back and face and one burial was accompanied by a dog. Grave goods include shell and copper beads, chipped stone projectile points and knives, axes of elk antler, bone tubes, copper head ornaments, and one shell gorget of the sandal sole type. The site would appear to establish the presence of the Glacial Kame complex in Wisconsin at perhaps an Early Woodland temporal position.

OHIO. During the months of May, June, and July the Department of Archeology, Ohio State Museum, carried on salvage explorations of an Adena site located within the corporate limits of Columbus, Ohio. The site consisted of a circular earthworks, 400 feet in diameter, enclosing one large and one small mound. The larger mound yielded a circular house pattern and fragments of human reburials. Several troughlike pits dug into the bottom of the interior ditch of the enclosure contained a considerable amount of refuse.

The archaeological program at Fort Hill State Memorial in cooperation with the Ohio State University was continued with further excavation of the circular enclosure. Excavation of a large section revealed the posthole pattern of a large ceremonial structure. Potsherds, fragments of mica, and flint artifacts were recovered from the wall of the enclosure and the fill of the postholes.

The entire departmental program was under the direction of Raymond S. Baby, Curator of Archeology, the Ohio State Museum, with William H. Sassaman of the Department of Anatomy, Western Reserve University, supervising the work at Fort Hill.

NORTHEAST

The Cohannet Chapter of the Massachusetts Archaeological Society is excavating a second area at the Wapanucket Site on the north shore of Lake Assawompset in Middleboro, Massachusetts. At least two occupations are present, a late historic complex which includes pottery and trade articles referable to the Wampanoag, found in the loam and upper yellow soil, and an underlying occupation characterized by steatite bowls, grooved axes, stone gouges, stone pendants, graphite and hematite paintstones, rude pestles, notched netsinkers, fire-making sets and notched projectile points with expanded bases. Large disturbed areas, 20 or more feet in diameter and 5 or more feet deep, containing shallow, grave-like pits filled with a black organic substance and often producing red hematite paint, are coming to light. Maurice Robbins, who has reported on this work, sees similarities with the Early Woodland Orient culture of eastern Long Island.

Green Point on Narragansett Bay is the locus of a dig sponsored by the Narragansett Archaeological Society of Rhode Island and directed by William S. Fowler. Significant correlations of ceramic and lithic industries have been achieved to date.

"In Connecticut," according to Irving Rouse, "three previous projects are being continued this summer. The

New Haven Chapter of the Archeological Society of Connecticut is excavating further at the Grannis Island site in New Haven and has found additional Vinette I type pottery of the North Beach period. Frank Glynn, of the Middlesex Chapter, is working again at the Pilot's Point stone heap near Clinton, where he has found two sherds which appear to be of Vinette II types. The Williamantic State Teachers' College is in its final season's work at the Main site near New London. Like Grannis Island, this site appears to have been occupied intermittently for a long period, extending from North Beach to Colonial times."

The New York State Science Service is conducting excavations in the middle Hudson Valley on a multi-stratified site yielding four levels of prehistoric occupation ranging from Archaic I to Late Woodland IV, and providing considerable new information relating to the culture sequence in the eastern part of New York State. Correlations are being made with other sites in the area; soil studies are underway, and efforts to derive pollen samples will be attempted to ascertain, if possible, the prevailing climatic conditions, especially for the lower levels. The work is under the supervision of William A. Ritchie, assisted by Charles E. Gillette and Walter Knowlson.

Later in the season Ritchie, aided by Peter P. Pratt of Toronto, and others, will again excavate on Frontenac Island, Cayuga County, with special emphasis on the collection of charcoal samples from hearths at sundry levels of this important and long occupied station, one level of which has already been dated by Libby and Arnold at 2,980 B.C. ± 260 years.

In September and October, Ritchie and Irving Rouse of Yale Peabody will perform, under State Science Service auspices, reconnaissance and excavation on several eastern Long Island sites.

In July, Ritchie visited, through the courtesy of Mr. and Mrs. O. R. Burger of New York City, significant sites on Kempt, Manowan and Nemiskachi lakes in northern Quebec Province, which are producing chipped stone ulus, stone gouges, projectile points, knives and scrapers of Laurentian forms, and in some cases, dentate, pseudo-scallop shell, and rocker-stamped pottery of Point Peninsula types. A remarkable cache of some 200 stone objects, previously found by Mrs. Burger, was studied in detail and will subsequently be published by its discoverer.

Alfred K. Guthe, for the Rochester Museum of Arts and Sciences, has been engaged in archaeological salvage work in western New York, where commercial and highway grading uncovered prehistoric burial sites of Iroquoian provenience in West Chili, Monroe County, and near Phelps, Ontario County.

In western Pennsylvania and adjacent regions, according to William J. Mayer-Oakes, "work under the Upper Ohio Valley Archaeological Survey program was continued in 1953 with most of the winter and spring being spent on final study and preparation of a monograph on the first three years of survey work. Dragoo worked on the excavation report on the Johnston site, 36In2, which was dug last fall as a cooperative project with National Park Service. In February the first number in the new *Anthropological Series* was issued. It was titled 'An archeological survey of the proposed Shenango River Reservoir Area in Ohio and Pennsylvania.' 1953 field work with a party of 8 is the first in a series of excavation projects and work was concentrated on the Watson Farm, 46Hk34, in the northern West Virginia panhandle. This site is the type site for the limestone-tempered Watson Cordmarked pottery and promises to produce information which may illuminate some of the Middle Woodland problems in the Upper Ohio Valley. Excavation of a small stone and earth burial structure is now underway [July 22] and next week a midden or house area will be started."

Frank Ridley of Toronto has contributed the following note: "For the purpose of clarifying certain aspects of the Frank Bay site on Lake Nipissing, Ontario, a reconnaissance expedition of the north shore of this lake was made. A site was located on the mainland near the Sturgeon River and another on an island at the mouth of the same river. A test square was excavated into the mainland site, which yielded fragmentary scraps of cord-marked and incised pottery intermixed with European trade material. Much disturbance of the site by industrial and agricultural operations is indicated. Testing on the island site revealed hearths and some Lalonde type pottery.

Paul Sweetman and Ridley journeyed by canoe to a small lake in the Lake Wanapetei area, northeast of Sudbury, Ontario. On a sandy field, overgrown with scrub and pine, were unearthed many fire-cracked stones but no artifacts were found. The prospector who reported this site, picked an ovate quartz knife and a notched point from the beach. Along the water route to this site, firestones and quartz fragments are to be seen washed out of several sandy beaches. Rock paintings were seen along the water route. Attracted to the Cobalt district by the reported presence of Laurentian culture artifacts, Sweetman and Ridley located an Archaic period deposit on the Montreal River. This river was an historic route to James Bay. Excavation of two test squares revealed a black deposit 9 inches in depth from which were recovered a trade bead and several Laurentian type artifacts. Below the black stratum in clean yellow sand were found many firestones and two stone hearths, one 12 inches, the other 22 inches from the surface. The lowest stratum may be related to the deepest level of the Frank Bay site. Excavation of this site and further work at Frank Bay will be undertaken during the summer of 1953.

SOUTHEAST

KENTUCKY. The Museum of Anthropology at the University of Kentucky is now undergoing renovation. Some $18,000 will be spent, in large part to put the building in shape. However, there will be funds left over to start a good regional archaeological museum.

Professor Webb has recently published his Jonathan Creek report series and is working on a site report (Dover Mound-Adena) and a summary paper on the Archaic.

TENNESSEE. During the early part of June, Carl Miller made a preliminary reconnaissance at the Cheatham and Old Hickory reservoirs on the Cumberland River above Nashville, Tennessee, for the River Basin Surveys. He found a number of sites in both areas and some salvage excavation undoubtedly will be needed there.

GEORGIA. Charles Fairbanks of the National Park Service dug at Ft. Frederica from the end of February until May 1, in part with funds donated by interested individuals. The town gate, a wooden structure, was excavated along the adjacent parts of the town rampart and moat. Considerable information on the palisades was recovered.

Two small excavations located the probable course of the main cross street of the town and the three corners of the regimental barracks not previously excavated. The final month was spent in the fort area. Here a fallen parapet wall of tabby was found on the north side and a foundation for a similar wall on the east side. The contours of the moat were uncovered as well as the location of the inner and outer palisades, in some cases with post bases still in place. When the Auguspurger map of 1736 is converted to French feet, the measurements agree quite well with those found. A ruined brick building 65′ x 18′ was located on the north side of the fort parade and is believed to be the remains of the King's Storehouse. A tabby building was found in the gorge of the northeast bastion. It is believed to be a storehouse or guardhouse. A well precedent to this building had a large amount of English flint in its base. There is also a suggestion that the English may have been making musket flints here out of the ballast flint.

In the town area two sherds of Spanish majolica along with some olive jar sherds and late, slightly aberrant, Indian sherds were found. Documentary evidence suggests that the mission of Santa Buenaventura may have been in this section. Further work will be necessary to check this.

A few San Marcos sherds and one olive jar sherd were found on the south end of St. Simons at approximately the point where early English maps indicated "old Spanish gardens."

Fairbanks had a chance to re-examine a part of the collections made by Holder on St. Simons in the mid-thirties. St. Johns Check Stamp showed with some strength on the Airport Site on St. Simons. The Evelyn mound material looks more and more like Kolomoki with a late type of Swift Creek Complicated Stamp very similar to Kolomoki Complicated Stamp. There is also at least one turtle effigy suggesting the Weeden Island influence or element present at Kolomoki. A large and interesting surface collection was made at the abandoned town of Sunbury, Liberty County. This was occupied mainly from 1750 to 1790 and shows an interesting series of changes from Frederica, occupied a little earlier. Scratched blue was much more abundant as were the English Delft spatter types.

William H. Sears has begun work on the first season of exploration at Etowah mounds, near Cartersville, Georgia. The Georgia Historical Commission, working in collaboration with the Department of State Parks, and the archaeologists at the University, will expend an allocation of $5000 for the summer work. Initial exploration will be in the village areas and possibly a segment of the prehistoric moat surrounding the site may be uncovered.

Arthur R. Kelly will complete a reconnaissance of historic and protohistoric Seminole sites at the confluence of the Flint and Chattahoochee rivers, southwest Georgia. The program hopes to disclose the continuity of late cultures in the "forks area" centering on problems related to the occurrence of "pure" brushed, scratched or combed pottery series of the sort related to 17th and early 18th century Creek Indian sites in middle-Georgia (Old Ocmulgee Fields) and in the Savannah area (Palachicolas).

In August, Kelly surveyed the Shakerag mound on upper Chattahoochee River, Forsyth County, where the river has cut away a portion of a mound, perceived on basis of village ceramic collections to belong to Etowah II or Etowah III. Some indications of stone cist graves and copper and shell artifacts promise Southern Cult finds.

Lewis Larson returns to complete his coastal survey of Spanish mission sites, working from July to September, under the auspices of the Georgia Historical Commission. The survey will comprise Jekyll Island, St. Simons, Cumberland Island, and portions of the mainland.

Sheila K. Caldwell, for the Georgia Historical Commission, will continue explorations at Darien Bluff, a Spanish mission site. Work will uncover more of the two-acre area in which presumptive Huspaw Indian pottery has been found in association with Spanish wares, olive jars and majolica. Documentary sources imply that this site is probably Espogache, begun around 1607, possibly destroyed by Moore in 1706 or abandoned in late second half of 17th century.

Carl Miller, of the River Basin Surveys, excavated two units at a site on the Flint River, in the area which will be flooded by the Jim Woodruff Dam. At that location he found a multiple component site with a Santa Rosa-Swift Creek base overlain by a fairly deep deposit of Weeden Island I material. Miller has not had an opportunity as yet to work over his material in detail but on the basis of his examination in the field, he thinks that it may be necessary to further subdivide the Weeden Island culture.

FLORIDA: In the late spring University of Florida excavations continued on the Hughes Island mound, a Weeden Island I site with considerable Kolomoki material. This mound apparently substantiates the Weeden

Island I picture for this part of Florida as presented by Willey and Goggin. Nevertheless it still cannot be equated with the Kolomoki problem.

An archaeological survey, under the direction of John M. Goggin has started on, and adjacent to, the 2V Ranch, in northern Charlotte County. So far 36 sites have been found ranging from small to large shell and sand mounds. One of the shell middens, Big Mound Key, has never been reported in the literature and is one of the largest dozen or so in the state. Ceramic material ranged from fibre-tempered pottery (at 3 sites) to historic Spanish pottery. Some test excavations will be made here in the fall.

The third season of work at the Fountain of Youth Park, St. Augustine will continue under the direction of Paul Hahn, last year's co-supervisor. Work on the final report by Hahn and Marguerita Goggin is now underway.

Ripley P. Bullen, Curator of Social Sciences, Florida State Museum, excavated during the month of June on the west side of the Chattahoochee River in Florida within the future basin area of the Jim Woodruff Dam. Work was done under a contract between the National Park Service and the University of Florida, represented by the Museum. A 14-foot deep section produced preceramic, fibre-tempered Deptford, and Ft. Walton material separated by sterile zones. Both the fibre-tempered and Ft. Walton zones were very productive. Of interest is the fact that two of the fibre-tempered sherds were Orange Incised. In the Ft. Walton village, pits of charred corn were found. Another small but relatively rich site produced pottery which seems to represent a pure Kolomoki occupation.

LOUISIANA. The Ford-Phillips-Haag report on the Jaketown site is now in press and additional work at Poverty Point in north Louisiana is planned before a report on that site is prepared. A few miles north of Jonesville, Louisiana (site of the various Troyville mounds), a large truncated pyramidal mound is being investigated by a local group and William Haag is visiting this whenever possible.

WEST INDIES. Yale University and the University of Florida will conduct a joint program of excavations in Spanish mission sites on the island of Trinidad. The former institution will be represented by Irving Rouse and the latter by John and Marguerita Goggin. Work will last for one month in August and September.

En route to Trinidad, Goggin will continue his research in Spanish colonial archaeology with museum study in Haiti and Puerto Rico. A joint field study, with the Science Museum, Institute of Jamaica, will include a survey of some of the major colonial sites on that island.

Two weeks will be spent in the Dominican Republic working jointly with Emil de Boyrie Moya, Director of the Instituto de Investigaciones Antropologicos of the Universidad de Santo Domingo. This will include field surveys and stratigraphic testing in colonial sites.

While in Trinidad, Rouse also plans to excavate a nonceramic site. In addition, he will visit St. Lucia for a survey of the sites and collections on that island.

MIDDLE AMERICA

MEXICAN PLATEAU. Jorge Acosta started another season's work at Tula late in June, and hopes to do some work at nearby sites, such as Tepeji del Rio. MacNeish has found interesting material in pits at Chalco. Ignacio Bernal is making a surface survey of the Oaxacan valleys primarily to define the limits of Monte Alban culture. Reconstruction work is being carried out at Tamuin and on the Ixtlan temple at Nayarit. Martinez del Rio made important finds of basketry, textiles, sandals, weapons, etc. in a cave in Coahuila.

VERACRUZ AND TABASCO. Medellin Zenil, for the Department of Anthropology, State of Veracruz, excavated two heaps of kiln rejects at Los Cerros and Dicha Tuerta, near El Cocuite and not far from Cerro de las Mesas. These yielded more than 800 pottery figures, the greater part "smiling faces" of considerable size. Some wear caps carrying a central panel in relief with representations of herons eating fish, and of pelicans and monkeys, design elements never before found on smiling faces. These were associated with pottery of Upper Tres Zapotes. Dicha Tuerta also yielded large hollow female figures with shields bearing interesting reliefs of the same period. Medellin Zenil sees in some of these designs strong similarities to those on the north and south ball courts at El Tajin. He also recognizes among the pottery figures portraits of many deities prominent at a later date in the Aztec pantheon. They include Tlazolteotl, Xochiquetzal, Xipe, Mictlantecuhtli, etc.

Garcia Payon has continued excavation and restoration at El Tajin.

Work in the general area of southern Veracruz and Tabasco, including the lower Coatzocoalcos, Grijalva and Usumacinta basins was sponsored by three institutions.

Philip Drucker of the Bureau of American Ethnology, assisted by Eduardo Contreras of the Escuela Nacional de Antropologia e Historia, carried out an archaeological survey in western Tabasco and southern Veracruz, under the sponsorship of the Smithsonian Institution and the Wenner-Gren Foundation. The principal drainage systems to the westward of the Grijalva to and including the middle course of the Coatzocoalcos were traversed, with special emphasis on the zone between the edge of the coastal swamp areas and the base of the mountains. Ceramic samples were collected at most of the numerous sites found to try and define the boundaries of Olmec territory. Study of this material should determine the cultural affiliations of the sites.

The New World Archaeological Foundation, with headquarters at Orinda, California, worked in the Grijalva basin and neighboring areas. Because of illness, Pedro Armillas was unable to remain in the field, and William T. Sanders took charge with Piña Chan as

assistant. A survey disclosed 39 housemound sites and one rather large group in the vicinity of Huemangillo, Tabasco. The last, known as the Sanchez ruin, was picked for more intensive work, and proved to be a late classic and postclassic center with much classic Maya influence. Excavations were also made at De La Cruz, a postclassic site displaying few specific outside influences. A third excavation, close to Olmec territory, brought to light Middle Tres Zapotes and late classic horizons.

Heinrich Berlin, as a fellow of the Department of Archaeology, Carnegie Institution of Washington, traversed the lower Usumacinta drainage from Bellote to the Campeche border. He reports brick construction commoner in the area than previously supposed, and notes the use of shell mortar. Shell mounds are numerous. Excavation at Tecoplan, on the Usumacinta below Emiliano Zapata, revealed an abundance of Fine Orange and figurine heads of classic Maya types.

MAYA AREA. Alberto Ruz' discovery of the splendid burial in the secret chamber beneath the Temple of the Inscriptions, Palenque, has been widely published. The raising of the huge carved slab (*American Antiquity*, 18:301) revealed a grave with red painted walls covered with a queer shaped stone with stoppered holes for raising. The skeleton, that of a large man in the supine position, was heaped with jade. A diadem of jade disks had covered the forehead and a mosaic mask of the same material had been placed on the face. The hundreds of fragments forming the latter had been attached to a stucco backing; pieces of shell with obsidian for the irises and painted black spots for the pupils, formed the eyes. Strings of beads had been around the neck, and on each arm there had been an armlet of two hundred jade beads, long enough to wrap around the arm nine or ten times. A jade ring had been on each finger; the jade earplugs are engraved with hieroglyphs. A jade idol was near the feet and a jade bead had been placed in the mouth as was the Maya custom. A most important feature of this burial is that it can be dated in terms of the Maya calendar with some certainty; it almost surely was made in the last decade of the seventh century according to the Goodman-Martinez-Thompson correlation. Ruz returned to Palenque in July.

Members of the staff of the Instituto Nacional de Antropologia e Historia have erected an enormous thatch roof over the building with the murals at Bonampak.

In Yucatan, Ruz and Cesar Saenz have continued work on the Adivino and Governor's Palace at Uxmal; Ponciano Salazar continues the restoration of the Codz Pop building at Kabah.

Carnegie Institution of Washington concluded another season's work at Mayapan. Robert Adams studied shrines and other small ceremonial structures, and William Bullard continued his investigation of property walls. An important discovery was that of two temples sharing a common platform but each reached from the plaza by its own balustraded stairway. This feature is almost unknown in the Maya area prior to the Mayapan period, but it is associated with hill-top sites of the late postclassic or protohistoric period in the Guatemalan highlands, and presumably derives from the Mexican plateau, where it is common.

No building in Puuc style has yet been found at Mayapan, although much Puuc veneer stone was reused in buildings of the Mayapan period. Among the 68,000 sherds found in 1953 was a fair sprinkling of Fine Orange, but no plumbate. This last is good evidence that the Mayapan period was not contemporary with the great building period of Toltec Chichen Itza. Effigy incensarios came into use in great numbers toward the end of the Mayapan occupation, but the local wares are dispiriting, and there is not much evidence of trade wares other than Fine Orange. Burials also have been discouraging. In Structure Q95 a circular shaft, which yielded burials of 41 persons of all ages, led from the summit to underlying bedrock. A natural pocket in this had been enlarged to serve as a burial chamber for an elderly man and woman. Despite huge quantities of bird and animal bones, mortuary pottery was of very poor quality. The funeral baked meats may have been placed in gourds, for they certainly were not in lordly dishes. The most pressing problem now facing workers in Yucatan is to find what was happening in the region when Toltec Chichen Itza was at its height.

British Honduras was the scene of considerable archaeological activity. In February Gordon Willey and William Bullard, representing Harvard University, and Linton Satterthwaite and J. Epstein, of University Museum, Philadelphia, reviewed archaeological sites from Benque Viejo, at the Guatemalan border, to Orange Walk, near the edge of the Pine ridge. This region includes such well-known ceremonial centers as Benque Viejo and Baking Pot. Recent large-scale agricultural clearings on the river terraces have revealed clusters of small mounds which appear to be house groups. This is an interesting insight into Classic Maya settlement patterns, for it suggests that hamlets of sustaining populations were scattered at distances of up to three miles from the temple centers. The latter are on the ridge tops rather than on the river terraces. Willey and Bullard excavated a small mound, one in a group of twelve located one km. from the ceremonial center of Cahal Pech, on the outskirts of the modern town of El Cayo. This mound, a low (75 cm.) rock platform with an apron attachment, disclosed an abundance of sherds, flint knives, metate and mano fragments, and other evidences of domestic occupation. Willey hopes to begin next year intensive survey and excavations in the Belize Valley, perhaps working at and around Cahal Pech, with emphasis on the problem of settlement patterns.

Michael Stewart, associate of the British Museum, resumed excavations at Benque Viejo in February. He uncovered a small building at the foot of one of the large pyramids enclosing the main plaza. This was found to have been erected to house a plain stela. He also found two caches of fine eccentric flints.

Linton Satterthwaite and Jeremiah Epstein, for University Museum, Philadelphia, mapped the main group at Caracol. They found two vaulted tombs, the contents of which included 35 vessels, a new altar, and large missing portions of two stelae. A few days at Benque Viejo integrated work of the 1950 museum expedition with results of later investigations by A. Hamilton Anderson for the British Honduras government. Anderson, who has been appointed to the new post of archaeological Commissioner, assisted at Benque Viejo and during the last two weeks at Caracol. Stelae 5 and 16, from Caracol have been restored and are now on exhibition in University Museum; Stela 3 has been sent to the Denver Museum of Natural History. A new museum, partly for archaeology, is being built in Belize.

SOUTH AMERICA

British Guiana. Clifford Evans and Betty J. Meggers furnished the following report on their recent fieldwork: "We returned on April 20, 1953, from six months of anthropological research in British Guiana, under the sponsorship of the Fulbright Program, private research funds of the Smithsonian Institution, and the British Guiana Museum. As a result of magnificent cooperation by the Director of the British Guiana Museum, Mr. Vincent Roth, and his assistant, Mr. Ram S. Singh, and other government authorities, it was possible to cover twice the area contemplated in the study. Air transportation took the place of river routes with hundreds of miles of rapids, and trips that would have required six weeks by boat could be accomplished in a few hours. As a result only one district of any size was not covered in the archaeological study but investigations by others reveal nothing of significance there.

"Along the southeastern coast, three sites on the Abary River were dug stratigraphically; in the Northwest District, the area which adjoins Venezuela, 23 sites were excavated. These include both preceramic shell mounds and hilltop sites with Barrancoid pottery. In fact, the problem of the shell mounds should be clarified, for in some sites the preceramic levels give way in the upper horizon to a crude type of pottery. The Barrancoid style pottery is an introduction into the area; the details of this interpretation await a careful analysis of the stratigraphic excavations and a comparison of this material with Rouse's and Cruxent's Barrancoid materials from the Lower Orinoco and Trinidad.

"In the Rupununi District, southern British Guiana, an area of mixed savanna, mountains and heavy forest, 39 sites were studied, including both cemetery and village sites. Contrary to any mythological stories of El Dorado that still persist, archaeology once and for all rules out British Guiana as an area of an aboriginal El Dorado. All this material from the Rupununi is extremely crude, plainware. All the sites in this area appear to be post-1500 and in most cases the occupation is within the last few centuries. The material suggests that this part of British Guiana was a refuge for aboriginal groups driven from the Lower Orinoco, the Amazon and the Guiana coast, by intense European contact, and not a point of origin or development.

"In the headwaters of the Essequibo River, we not only made a thorough archaeological investigation but also an ethnographic study and collection of material cultural objects of the Waiwai Indians. This is the only group of unacculturated American Indians in British Guiana and will soon no longer hold that distinction now that missionary contact has begun. The missionaries have made little inroad as yet on the Indians' culture and it was possible to study Tropical Forest archaeology in the making. In addition to the older archaeological sites in the area, a few abandoned Waiwai villages were excavated where the time of occupancy, number of inhabitants, etc. were known. It is hoped that this information will shed some light on the rate of accumulation of trash of a Tropical Forest culture. Other work which will prove extremely significant in interpreting the development of culture in the tropical forest was a study of the actual land available for slash and burn agriculture in a tropical forest situation. The ceramics were again extremely crude: decorated ware consisting of a few incisions and scrapings and an occasional painted sherd, none of which is affiliated with the known cultures of the Lower Amazon, the Territory of Amapá or Santarem. Again the type of deposits and the absence of successive horizons in the area suggest that the occupancy of this part of British Guiana by tribes of the Tropical Forest cultural pattern is relatively late compared to parts of Brazil or Venezuela. No evidence was uncovered that would suggest that the Essequibo River was an important migratory route into the Amazon drainage via the Mapuera and Trombetas Rivers."

Colombia. An important landmark in the growth of anthropology in Colombia was marked by the founding, in October, 1952, of the Sociedad Colombiana de Etnología. "Ethnology" is used in the French sense in Colombia, to mean general anthropology, so the new Society will also serve archaeology. The officers of the Society are as follows: President, Gregorio Hernández de Alba. Secretary, Luís Duque Gómez. Assistant Secretary, Edith de Muñoz. Treasurer, Miguel Fornaguera. Since Dr. Duque is in the United States on a Guggenheim Fellowship, the Assistant Secretary is handling official correspondence. The address of the Society is: Apartado Nacional 2334, Bogotá, Colombia. The Society is planning to publish the proceedings of its meetings and distribute them to members and by exchange.

The Society's membership is not limited to Colombians but includes anthropologists in other countries who are interested in Colombian anthropology. One of the Society's aims is to encourage the exchange of ideas among all persons and institutions sharing its interests.

Peru. The national archaeological administration was reorganized by a Decreto Supremo of October 17, 1952, which created the Dirección de Arqueología e Historia to supervise the enforcement of legislation for the pro-

tection of antiquities, coordinate all government activities relating to archaeology, and stimulate research in this field. All the national and regional museums, including the Museo de la Cultura Peruana, Avenida Alfonso Ugarte 650, Lima, and the Museo Nacional de Antropología y Arqueología in Magdalena, have been put under the Dirección, as has the service of Inspection of Monuments. Permits for excavation and export of archaeological specimens are also in its field of responsibility.

Jorge C. Muelle has been appointed Director de Arqueología e Historia under the new arrangement. His appointment brings well-merited recognition to one of the ablest and best qualified of Peruvian archaeologists. The address of the new Dirección is: Plaza de San Pedro no. 404, Lima, Peru.

At about the same time that the administration of Peruvian archaeology was reorganized, a group of anthropologists and friends of anthropology in Lima organized a new society, the Sociedad para la Antropología Peruana (Society for Peruvian Anthropology), with headquarters at the Museo de la Cultura Peruana. The Society plans to publish a quarterly bulletin and a memoir series. Membership is open to all persons interested in the program of the Society, and dues are $5.00 (U.S.) a year. ($3.00 for students.) Communications regarding membership should be sent to Louis M. Stumer, Treasurer. The president of the Society is Richard P. Schaedel and the vice president is Pedro Weiss.

The Society sponsors an annual lecture series (April to November) and arranges round table discussions on questions of general interest. The first of these, in December of 1952, was on the focus of Mestizo culture. The second, January 8-9, 1953, was on regularizing terminology in Peruvian archaeology. A report on the proceedings of this meeting will be circulated by the Society.

THE COMMITTEE FOR THE RECOVERY OF ARCHAEOLOGICAL REMAINS

Upon various occasions members of the Committee have been requested to supply details concerning the method of financing the archaeological salvage work behind federal multi-purpose dams. As is generally known, the work has been organized under a general title "Inter-Agency Archaeological and Palaeontological Salvage Program." Certain parts of the program are carried forward under the jurisdiction of the Smithsonian Institution through a memorandum of understanding with the National Park Service. Other work is done directly under the National Park Service. Because archaeologists have sometimes been puzzled concerning the source of funds, the National Park Service, at the request of the Committee, has supplied the following explanation:

Under the terms of the Historic Sites Act of August 21, 1935, the National Park Service is the federal agency which is specifically charged with the responsibility, under the direction of the Secretary of the Interior, for the evaluation and preservation of the historic sites and buildings of national significance in the United States and its possessions. This Act encompasses archaeological sites as well as purely historic sites.

All funds for archaeological work done by the National Park Service are obtained through annual appropriations made by the Congress of the United States and are carried in the Interior Department Appropriations Acts for each fiscal year. With these funds the National Park Service administers four different archaeological programs and the funds for these four different programs are appropriated by the Congress in different portions of the annual Interior Department Appropriation Acts.

1. Salvage Archaeology in the Missouri Basin.

Almost all of the agencies of the Department of the Interior are concerned with various facets of the over-all river and flood control program under way in the Missouri Basin. These include the Fish and Wildlife Service, the Bureau of Mines, the Bureau of Indian Affairs, the Bureau of Land Management, Geological Survey, and the Bureau of Reclamation, as well as the National Park Service. The construction agencies are the Bureau of Reclamation in the Department of the Interior, and the Corps of Engineers, U.S. Army, Department of Defense. The Department of the Interior yearly requests funds from Congress in order that the natural resources and the historical features of the Basin may be properly developed or preserved as the case may be.

Rather than belabor the Congress with numerous individual requests for each of its agencies concerned, the Department of the Interior lumps together the estimates prepared by the individual agencies in one item, known as the "Missouri Basin Project," and includes this item in the over-all estimates for the Bureau of Reclamation since that Bureau has the largest fiscal interest of the agencies of the Department of the Interior in the Missouri Basin project.

However, the National Park Service has two primary and important spheres of interest in the Missouri Basin: (a) Recreational aspects and (b) salvage of archaeological, historical and paleontological remains threatened by inundation. Each fiscal year following the guidance and estimate ceilings as expressed by the President through the Bureau of the Budget, separate estimates for these two activities are prepared by the National Park Service. These two estimates are then combined together in one item and forwarded to the Bureau of Reclamation for inclusion with similar estimates from the other Departmental agencies concerned. This final combined estimate is the one which is included in the Bureau of Reclamation's over-all estimate and is the one known as the "Missouri Basin Project."

The Bureau of Reclamation's estimates, along with the rest of the Department's budget estimates, are submitted to Congress through the Bureau of the Budget. The funds requested may be either allowed, reduced, or occasionally increased by the Congress. If there are differences of opinion between the House of Representatives and the Senate as to the amounts which should be appropriated for specific activities, these differences are ironed out in special conferences between representatives of the two bodies. When the bill in its final form has been agreed to and passed by both Houses, it is then forwarded to the President for approval. When the bill is signed by the President, the funds appropriated therein are available for the purposes for which they were appropriated.

If the Congress decides that the amount of funds as requested by the federal agencies is too large and should be reduced, it might specify the program to which the reduction shall apply. However, in the case of the Missouri Basin Project, this is usually done by providing a blanket reduction for the over-all project. When this reduced amount is made available by the President's signing of the Appropriations Act, the Department of the Interior decides what proportionate amount of the blanket reduction should be passed along to each of the agencies concerned. When the National Park Service receives its proportioned reduction, it in turn must decide how this reduction shall be divided between its two primary activities — recreation and salvage archaeology.

2. Archaeological Explorations.

This item includes estimates for salvage archaeology in all areas of the United States and its possessions other than the Missouri River Basin and also includes estimates for a continuing program of archaeological work in areas directly administered by the National Park Service. This particular item is a sub-activity of the Management and Protection Appropriation included in the over-all estimate of the National Park Service which in turn forms a part of the Department of the Interior Appropriation. Reductions or increases in this item affect proportionarely both the salvage work and the continuing exploration program carried on by the Service.

3. Ruins Stabilization.

Each year certain funds are requested by the National Park Service for the stabilization of prehistoric structures, particularly those in the southwestern portion of the United States, under the Maintenance and Rehabilitation work within the Service as a whole.

4. River Basin Studies.

By special request of former President Truman, two areas of the United States, namely, the Arkansas-White-and-Red-River Drainage area and the New York-New England States area, were designated to receive special intensive surveys regarding their over-all resources. Among the more definite and concrete resources of these areas there are included such aspects as recreational potentialities. It is believed that such recreational potentialities also include the archaeological and historical resources inherent in the region. Thus for a limited period of time the National Park Service has received funds with which to carry out archaeological and historical surveys of these two areas. The time is limited since definite target dates have been set for submission of reports, and these are not, therefore, continuing programs of the Service.

FREDERICK JOHNSON
Secretary
Committee for the Recovery of Archaeological Remains.

OLD WORLD ARCHAEOLOGY

The *Committee for Old World Archaeology*, the formation of which was announced in a previous issue, has completed its investigation. As a result of its recommendations, a permanent organization, the *Council for Old World Archaeology*, has been formed and incorporated.

The control of the Council is vested in charter members, who were nominated by nine organizations, as follows:

Jotham Johnson (Archaeological Institute of America)

Lauriston Ward (American Anthropological Association)

Robert J. Braidwood (American Schools of Oriental Research)

Irving Rouse (Society for American Archaeology)

Bruce Howe (American School of Prehistoric Research)

Richard K. Beardsley (Section H, American Association for the Advancement of Science)

Schuyler Cammann (American Oriental Society)

J. Lawrence Angel (American Association of Physical Anthropologists)

George C. Miles (American Numismatic Society)

At a meeting in Cambridge, Mass., May 23, 1953, the following were elected trustees: Lauriston Ward (President), Noell Morss (Clerk and Treasurer), J. Lawrence Angel, Wendell C. Bennett, Robert J. Braidwood, Schuyler Cammann, Bruce Howe, Jotham Johnson, George C. Miles, C. R. Morey, Irving Rouse and Erik Sjöqvist.

A meeting of the trustees was held in New York, May 23 and 24. It was agreed that the Council should concern itself with the archaeology of all Europe, Africa, Asia and Oceania, for all periods of time, and that its major activity should be the publication of information in this field, chiefly in the form of annual surveys of archaeological news and selected annotated bibliographies.

Plans for financing are now under way and it is hoped that publication can begin some time in 1954.

OHIO VALLEY ARCHEOLOGICAL CONFERENCE

The *Ohio Valley Archeological Conference* was formally inaugurated at a special organizational meeting on 2 July 1953, at the Fort Hill Field Headquarters of the Ohio State Museum Department of Archeology. The formation of this new regional unification of archaeological and ethnohistorical research workers was the culmination of several years of discussion of the need for recognizing certain commonalities in the anthropological problems of the Ohio River drainage. The new organization adopted the following statement of purpose:

> The Ohio Valley Archeological Conference is established for the purpose of exchanging information on the prehistory of the Ohio Valley region. Meetings will be held annually, at a spot designated by the membership, and in a location included within the region of interest to the Conference. Special meetings with related professional groups may be called at the discretion of the officers. A News Letter and other publications will be issued. Officers of the organization will consist of a Chairman and Editor, the former elected for a one-year term; the latter for an indefinite term. Membership is open to archeologists, anthropologists and scholars from related fields interested in the prehistory of the Ohio Valley and adjoining areas.

It was voted to establish a $1 membership fee which will be payable in 1954, when the first open meeting of the Conference will be held at Fort Hill. It was also decided that an *OVAC News Letter* would be established when the need and interest arose, presumably following the 1954 meeting. Anthropologists interested in the problems of the region will be notified of membership regulations and plans for the 1954 meeting by special letter. It is hoped that attendance at the 1954 gathering will be sizeable. Subsequent meetings will rotate among the concerned institutions and areas.

Members of the Conference will also participate in the first meeting of the Ohio Valley Historic Indian Conference which is to be held in Columbus, November 20-21, 1953, at the Ohio State Museum.

OHIO VALLEY HISTORIC INDIAN CONFERENCE

The Ohio State Archaeological and Historical Society and the Ohio State University are sponsoring a meeting on the problem of the historic Indian in the Ohio Valley, to be held at the Ohio State Museum, November 20-21, 1953.

Officials of the Society and of the University extend a cordial advance invitation to all interested persons to attend.

The immediate purpose of this meeting is to organize an *Ohio Valley Historic Indian Conference*. It will be the aims of this Conference to hold meetings at regular intervals; to encourage the study of the historic Indians of the Ohio Valley; to exchange and disseminate information in this field; and to seek the cooperation of anthropologists, historians and scholars of other disciplines for the purpose of research on the historic Indian of the Ohio Valley.

For additional information on the conference, write either of the following:

James H. Rodabaugh, Acting Chairman, Ohio Valley Historic Indian Conference, Division of Research, Ohio State Museum.

John W. Bennett, Acting Secretary, Ohio Valley Historic Indian Conference, Department of Sociology & Anthropology, Ohio State University.

SPECIAL SALE!!!

By action of the Executive Committee of the Society for American Archaeology, extra copies of the Society's memoirs have been made available for *half*-price, if purchased as a lot. All memoirs, except No. 3, are still available.

Thus, Nos. 1, 2, 4, 5, 6, 7, 8, and 9 — listed at a total of $13.50 — will sell for only $6.75, if ordered as a group. This price will be good until further notice.

Send order, with funds, to:

Society for American Archaeology
c/o Robert S. Peabody Foundation
Box 71
Andover, Massachusetts

A CHECKLIST OF REGIONAL ARCHAEOLOGICAL JOURNALS*

The Society for American Archaeology was founded to encourage the development of knowledge concerning New World archaeology. While its journal acts as an important vehicle of communication for the field, much important information is published in regional journals, particularly those of local societies. This checklist is published in the hope that by making readily available subscription rates and appropriate local officers, these publication programs can be strengthened by additional subscriptions. The checklist, compiled by the regional editors of the journal, is not complete and appropriate additions are welcomed. No attempt has been made to include institutional series that are essentially monographic in nature or periodical publications, such as historical journals, that publish only occasional articles in archaeology.

Southeast

Early Georgia. Journal of the Society for the Preservation of Early Georgia History. Editor, A. R. Kelly. Two numbers of Volume 1 issued in 1950. Publication temporarily suspended. Subscription $3.00, or by membership ($5.00) in the Society. Applications should be sent to A. R. Kelly, Department of Sociology and Anthropology, University of Georgia, Athens, Ga.

The Florida Anthropologist. Journal of the Florida Anthropological Society. Editor, Robert Anderson. Current issue Volume 6; one volume of four numbers (usually doubled) per year. Started in 1948, 11 issues to date. Subscription included in dues of $3.00 per year. Applications should be sent to Ripley Bullen, Treasurer, 103 Seagle Building, Gainesville, Florida.

Publications, Florida Anthropological Society. Editor, Robert Anderson. Appears irregularly as material and finances warrant. Started in 1949, three numbers have appeared to date. Prices are variable but included in membership in the society.

Newsletter, Florida Anthropological Society. Editor, Frederick Sleight, President. Appears irregularly, but 1 to 6 numbers have appeared each year. Started in 1947, 22 numbers to date, currently publishing. Subscription included in Society dues.

Southern Indian Studies. Published jointly by the North Carolina Archeological Society and the Laboratory of Anthropology and Archeology of the University of North Carolina. Editor, Joffre Coe. Current volume number 3; one or more numbers per year. Started in 1949, five numbers issued to date and currently in arrears. Subscription included in dues of $2.00 per year to the North Carolina Archeological Society. Applications should be sent to the Society, Box 561, Chapel Hill, North Carolina.

Newsletter, Southeastern Archeological Conference. Journal of the Southeastern Conference. Editor, William Haag. Current number Volume 3, Number 3. One or more numbers per year. Started in 1939, suspended publication in 1941, resumed in 1951. 13 numbers issued to date, currently publishing. Subscription $1.00 per year. Applications should be sent to Dr. William Haag, Department of Geology, Louisiana State University, Baton Rouge, La.

The Tennessee Archaeologist. Journal of the Tennessee Archaeological Society. Editors, T. M. N. Lewis and Madeline Kneberg. Current volume number 9; one volume of 2 or 3 numbers per years. Started in 1944, 25 issues to date. Subscription included in annual dues of $2.00. Applications should be sent to the Department of Anthropology, University of Tennessee, Knoxville, Tenn.

Quarterly Bulletin of the Archeological Society of Virginia. Published by the society. Editor, B. C. McCrary. Current issue Volume 7, Number 4. Started in 1946. Subscription included in dues of $3.00 per year. Applications should be sent to G. F. Miller, Treasurer, 6300 W. Franklin Street, Richmond, Va.

Northeast

Researches and Transactions of The New York State Archeological Association. Published annually (or approximately) since 1918. Active membership $3.00, sustaining $5.00, life $40.00 (no institutional membership). Applications should be sent to William A. Ritchie, Secretary, New York State Museum, State Education Building, Albany 1, N.Y.

Pennsylvania Archaeologist. Published quarterly since 1930 by The Society for Pennsylvania Archaeology. Active membership $3.00, sustaining $5.00, institutional $3.00, life $50.00. Applications should be sent to Vincent R. Mrozoski, Secretary-Treasurer, 219 Main Ave., West Aliquippa, Penna.

Archeolog. Published irregularly since 1949. Active or institutional membership in Sussex Archeological Association $3.00. Apply to Miss Catherine Maull, Secretary, Zwaanendael Museum, Lewes, Del., or Miss Adele Chambers, Treasurer, Lewes, Del.

Bulletin of the Archeological Society of New Jersey. Published annually or semi-annually by the Society since 1948. Regular membership $3.00, institutional $2.50. Applications should be sent to Mrs. Kathryn B. Greywacz, Secretary, New Jersey State Museum, Trenton, N.J.

Bulletin of the Archeological Society of Connecticut. Published annually or more often (no fixed time of publication) by the Society since 1935. Regular membership $2.00, contributing $5.00, sustaining $10.00, institutional $1.00. Applications should be sent to Irving Rouse, Yale Peabody Museum, New Haven, Conn.

Bulletin of the Massachusetts Archaeological Society. Published quarterly by the Society since 1939. Active membership $3.00, institutional (Institutions paying dues

* This list was compiled by *Assistant Editor* Barrels from data supplied by all other assistant editors.

for five years in advance, i.e. $15.00, will receive in addition to five years of future issues, as complete a file of back numbers as it is possible to supply). Applications should be sent to William S. Fowler, Secretary, Bronson Museum, North Main Street, Attleboro, Mass.

Bulletin of the Eastern States Archeological Federation. Published annually (approximately) since 1941. Distributed through membership in one of the 12 affiliated archaeological societies of Eastern Seaboard States (Conn., Del., Fla., Me., N. H., N. J., N. Y., No. Can., Pa., R. I., Va., W. Va.) Mrs. Kathryn B. Greywacz, Corresponding Secretary, New Jersey State Museum, Trenton, N.J.

The West Virginia Archeologist. Published irregularly by the West Virginia Archeological Society. Regular membership $2.00, contributing $10.00 or more, institutional $5.00 for which a complete file of back issues will be furnished. Send contributions to Delf Norona, Secretary and Editor, 315 Seventh Street, Moundsville, W. Va.

Archeological Newsletter. Issued irregularly by the Upper Ohio Valley Archeological Survey, Section of Man, Carnegie Museum, Pittsburgh, Pennsylvania. William J. Mayer-Oakes, editor. Subscription price, $1.00 a year. Seven numbers issued as of April, 1953.

Northern Mississippi Valley

Journal of the Illinois State Archaeological Society. Published quarterly by the Illinois State Archaeological Society since July, 1943. Old series completed with Vol. VII, No. 4 (April, 1950); new series, Vol. 1, No. 1 initiated July, 1950. Editor, Melvin Fowler. Annual subscription $3.00. Order from Irvin Peithman, Secretary-Treasurer, Southern Illinois University Museum, Carbondale, Illinois.

News Letter (Illinois State Archaeological Society). Publication initiated December, 1952. To be published quarterly. Subscription included in Society dues.

Journal of the Iowa Archeological Society. Published quarterly by the Iowa Archeological Society since October, 1951. Editor, Wilfred D. Logan. Active membership $3.00, sustaining $5.00, life $50.00, institutional $2.00, student $2.00. Send applications to W. D. Frankforter, Secretary-Treasurer, Sanford Museum, Cherokee, Iowa.

Newsletter of the Iowa Archeological Society. Published irregularly by the Society. Subscription included in Society dues.

The Ohio Archaeologist. Quarterly publication initiated in 1951 to succeed the *Bulletin* of the *Ohio Indian Relic Collectors Society.* Annual subscription, $3.00. Send applications to Hubert C. Wachtel, Editor and Secretary, 307 Elmhurst Drive, Dayton, Ohio

The Missouri Archaeologist. Published quarterly by the Missouri Archaeological Society since 1935 (partial volumes issued in early years). Annual membership, $2.00. Send applications to Carl H. Chapman, Secretary-Treasurer, 15 Switzler Hall, University of Missouri, Columbia, Missouri.

Memoirs of the Missouri Archaeological Society. Variously priced but included in annual membership to Society. Two numbers have been issued to date.

Missouri Archaeological Society Newsletter. Issued monthly by the Society. Subscription included in Society dues.

The Minnesota Archaeologist. Published quarterly since 1935 by the Minnesota Archaeological Society. Last number issued, Vol. XVIII, No. 3 (July, 1952). Life membership $50.00, sustaining $5.00, annual $2.00. Send applications to the Society at the Science Museum, Minneapolis Public Library, 1001 Hennepin Avenue, Minneapolis 3, Minnesota.

The Totem Pole. Bulletin of the Aboriginal Research Club, Detroit, Michigan. Current number Volume 32, No. 4 (July, 1953). Membership dues $1.00 per year; $1.50 if the *Totem Pole* is to be mailed. Send applications to Douglas Quack, Secretary, 13366 Grandville Ave., Detroit 28, Michigan.

The Wisconsin Archeologist. Published quarterly by The Wisconsin Archeological Society. Twenty volumes of the old series published between 1901 and 1921. Volume 1, Number 1 of new series initiated January, 1922. Membership dues: life $25.00, endowment $500.00, sustaining $5.00, annual and institutional $2.00. Send applications to Kermit Freckmann, Secretary-Editor, 4240 N. 36th Street, Milwaukee 16, Wisconsin.

Plains

Plains Archaeological Conference News Letter. Published quarterly since July 27, 1947. Regular and institutional subscription, $2.00 per year. Send applications to Franklin Fenanga, Editor, Laboratory of Anthropology, University of Nebraska, Lincoln, Nebraska.

Bulletin, Texas Archeological Society. Published annually since 1929 (between 1929-1952 as *Bulletin, Texas Archaeological and Paleontological Society*). Membership including publication: $5.00 per year. Subscription without membership: $5.00. Send applications to Edward B. Jelks, Secretary-Treasurer, National Park Service, 601 East 19th St., Houston, Texas.

Bulletin, Oklahoma Anthropological Society. Annual publication initiated March, 1953. Active and institutional membership, $3.00 per year. Send applications to R. Scott Hall, Secretary-Treasurer, Oklahoma Anthropological Society, University of Oklahoma, Norman, Oklahoma.

Newsletter, Oklahoma Anthropological Society. Nine issues per year since publication was initiated March, 1952. Subscription included in Society dues.

Museum News. Mimeographed news letter of the W. H. Over Museum, University of South Dakota, Vermillion, South Dakota, containing frequent archaeologi-

cal articles. Subscription 50c per year; issued monthly. Send applications to Wesley R. Hurt, Jr., Editor at the Museum.

SOUTHWEST

El Palacio. A monthly review free to members of the Archaeological Society of New Mexico (dues $3.00 a year), and New Mexico members of the Archaeological Institute of America (dues $10.00 a year). Publication initiated, 1913. Order from Museum of New Mexico, Santa Fe, New Mexico.

Kiva. Quarterly journal, initiated 1935, of the Arizona Archaeological and Historical Society (dues, $2.00 a year). Order from Arizona State Museum, University of Arizona, Tucson, Ariz.

Masterkey. Published six times a year since 1927 by the Southwest Museum, Highland Park, Los Angeles, California. Cost of regular membership, $6.00; subscription rate, $1.50 per year.

The Museum News, Texas Technological College. Published quarterly since June, 1950 by The West Texas Museum Association. Cost of regular membership, $2.50 annually. Order from The Museum, Tech Station, Lubbock, Texas.

Plateau. Published quarterly by the Museum of Northern Arizona, Box 402, Flagstaff, Arizona. Began publication in 1930 under name *Museum Notes* which was issued monthly until June, 1939 (Vol. 11, No. 12) when name was changed. Regular membership, $5.00; special subscription price to libraries only, $2.00. Order from Museum.

Southwestern Lore. Quarterly journal published since 1935 by the Colorado Archaeological Society. Regular membership, $1.50. Send applications to Robert H. Lister, Editor, University of Colorado, Boulder, Colo.

Tree-Ring Bulletin. Published quarterly by the Tree-Ring Society since July, 1934. Regular and institutional membership or subscription, $2.00. Order from Edmund Schulman, Managing Editor, Tree-Ring Bulletin, University of Arizona, Tucson, Ariz.

MIDDLE AMERICA

Acta Anthropológica. Published by Escuela de Antropología, Moneda 13, Mexico D. F. Founded in 1945. Four numbers, each a monograph, compose a volume. Cost, $3.00 per volume (U.S.). To date three volumes have been published, the last December, 1948. Though now dormant, it is hoped to restart publication. Most numbers that have appeared are excellent.

Antropología e Historia de Guatemala. Founded in 1949 and issued twice a year. Subscription price $2.50 (U.S.) should be sent to journal at Edificio 5 de La Aurora, Guatemala. Last number to appear was in 1952 and starts Volume 4. Publication continuing, but with some delay. Good journal with some very worthwhile articles.

El México Antiguo. Journal, founded in 1919, is irregular in appearance. Last volume to appear was Volume 7 in December 1949, but another volume is planned. Subscription per volume (not by year) is $5.00 (U.S.) and should be sent to Senora Carmen Cook de Leonard, Madero 27-215, Mexico D. F. Quality of *El México Antiguo* varies. Some volumes have been first-rate, others not so good, depending on editor. Under new editor is back to standard. Volume consists of minimum of 380 pages.

Revista Mexicana de Estudios Antropológicos. Published by Sociedad Mexicana de Antropología, Moneda 13, Mexico, D.F. Subscription $2.50 (U.S.). Founded in 1927 (first two volumes appeared as *Revista Mexicana de Estudios Históricos*). Theoretically six numbers a year, but in practice often appears as a complete volume once a year. Volume 13 corresponds to 1952 and number 1 of this volume has appeared to date. Excellent journal.

Tlalocan, "A journal of source materials on the native cultures of Mexico." First number appeared in 1943. Four numbers to a volume irregular in appearance. Last to appear was Volume 3, Number 3, in 1952. Price $6.00 (U.S.). Published by La Casa de Tlaloc, Cuevas Rubio 65, Mexico, D.F. No dirt archaeology, but has published many important documents in native languages, with translations, on sixteenth century culture. Covers field between archaeology and modern ethnology. Primarily for specialists in Mesoamerica. Excellent in its restricted field.

Tlatoani. Journal, found in 1952, with subscription price of $2.00 (U.S.) a year, to be ordered at Apartado 1131, Mexico, D.F. One volume has appeared to date. Theoretically six numbers a year, but usually double numbers. Excellent journal.

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